ORDER NO. MKE0104107C1

D1

Service Manual

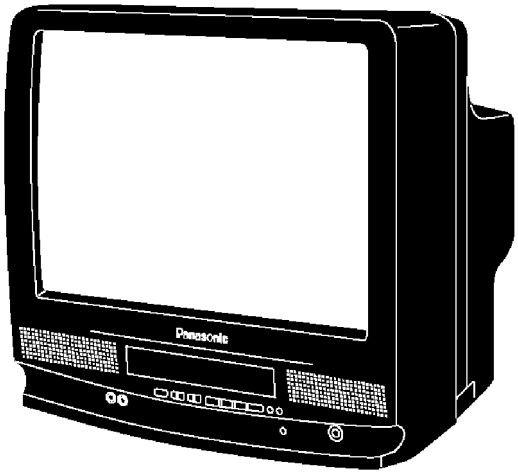
Combination VCR

Panasonic

Professional/Industrial Video

VHS

AG-513E / AG-520E



SPECIFICATIONS

ITEM		SPECIFICATION	1	2
VCR		Head: 4 rotary heads helical scanning system	o	o
	Video	Input Level: VIDEO IN Jack (Phono type) 1.0 Vp-p 75 Ω unbalanced Signal-to-Noise Ratio: SP: more than 43 dB LP/SLP: more than 41 dB Horizontal Resolution: Color/Monochrome: more: SP: 230 lines LP/SLP: 220 lines	o	o
	Audio	Head: Normal Mono: 1 stationary head	o	o
		Input Level: AUDIO IN Jack (Phono type) -10 dBv 50 kΩ unbalanced	o	o
		Frequency Response: Normal Mono: SP: 100 Hz-8 kHz LP: 100 Hz-6 kHz SLP: 100 Hz-5 kHz	o	o
		Signal-to-Noise Ratio: Normal Mono: SP: more than 42 dB LP/SLP: more than 40 dB	o	o
		Wow and Flutter: Normal Mono: SP: Less than 0.2 % WRMS LP: Less than 0.3 % WRMS SLP: Less than 0.4 % WRMS	o	o
	Tuner	Broadcast Channels: VHF 2-13, UHF 14-69 CABLE Channels: Midband A through I (14-22) Superband J through W (23-36) Hyperband AA-EEE (37-64) Lowband A-5- A-1 (95-99) Special CABLE channel 5A (01) Ultraband 65-94, 100-125	o	o

ITEM		SPECIFICATION	1	2
VCR	Tape Speed	SP: 1-5/16 i.p.s (33.35 mm/s), LP: 21/32 i.p.s (16.67 mm/s), SLP: 7/16 i.p.s (11.12 mm/s) Record/Playback Time: 8 hr. with 160 min. type tape used in SLP mode FF/REW Time: Less than 2-1/2 min. (120 min. type tape)	o	o
	Tape Format	Tape width 12.7 mm (1/2 inch) high density tape	o	o
DISPLAY	Picture Tube	13 inch measured diagonal 90 ° deflection Picture Tube 20 inch measured diagonal 90 ° deflection Picture Tube	o -	- o
GENERAL	Power	Source: 120 V AC±12 V AC, 60 Hz±3 Hz	o	o
		Consumption: Approx. 69 W (Power On), Approx. 4.0 W (Power Off) Approx. 110 W (Power On), Approx. 4.0 W (Power Off)	o -	- o
	Television System	EIA Standard (525 lines, 60 fields) NTSC Color Signal	o	o
	Operating Condition	5 °C-40 °C (41 °F-104 °F) (Temperature) 10 %-75 % (Humidity)	o	o
	Dimension (W x H x D)	386 mm x 385 mm x 374 mm (15-3/16 inch x 15-3/16 inch x 14-3/4 inch) 515 mm x 505mm x 474 mm (20-5/16 inch x 19-7/8 inch x 18-11/16 inch)	o -	- o
	Weight	12 kg (26.4 lbs.) 23 kg (50.7 lbs.)	o -	- o

1. AG-513E
2. AG-520E

Weight and dimensions shown are approximate.
Designs and specifications are subject to change without notice.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

1. SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Layout, Exploded Views and ReplacementParts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

2. An Isolation Transformer should always be used during the servicing of Combination VCR whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resultingin personal injury from electrical shocks. It will also protect Combination VCR from being damaged by accidental shorting that may occur during servicing.

3. When servicing, observe the original lead dress, especially the lead dress in the high voltage circuits. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.

4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers, shield, and isolation R-C combinations are properly installed.

5. Before turning the receiver on, measure the resistance between B+ line and chassis ground. Connect (-) side of an ohmmeter to the B

+ lines, and (+) side to chassis ground. Each line should have more resistance than specified,as follows :
(For model with 13 inch CRT)

B+ Line
Minimum Resistance

130.0 V
1 k Ω (Cold chassis ground)

23.5 V
180 Ω (Cold chassis ground)

13.0 V
110 Ω (Cold chassis ground)
(For model with 20 inch CRT)

B+ Line
Minimum Resistance

130.0 V
1 k Ω (Cold chassis ground)

21.5 V
180 Ω (Cold chassis ground)

15.9 V
110 Ω (Cold chassis ground)

6. **When the TV set is not used for a long period of time, unplug the power cord from the AC outlet.**
7. **Potentials, as high as 25.0 kV (For model with 13 inch CRT) or 30.0 kV (For model with 20 inch CRT) are present when this TV set is in operation. Operation of the TV set without the rear cover involves the danger of a shock hazard from the TVset power supply. Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the picture tube to the CRT ground of receiver before handlingthe tube.**
8. **After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazards.**

LEAKAGE CURRENT COLD CHECK

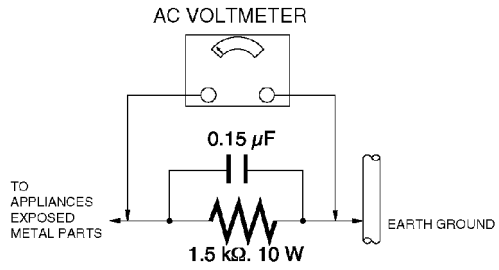
1. **Unplug the AC cord and connect a jumper between the two prongs on the plug.**
2. **For physically operated power switches, turn power on. Otherwise skip step 2.**
3. **Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screwheads, connectors, etc. When the exposed metallic part has a return path to the chassis, the readingshould be between 1 M Ω and 12 M Ω . When the exposed metal does not have a return path to the chassis, the reading must be infinity.**

LEAKAGE CURRENT HOT CHECK

1. **Plug the AC cord directly into the AC outlet.**
   Do not use a isolation transformer for this check.
2. **Connect a 1.5 k Ω , 10 W resistor, in parallel with a 0.15 μ F capacitor, between each exposed metallic part on the set and a good earth ground , as shown in Figure 1.**
3. **Use an AC voltmeter, with 1 k Ω /V or more sensitivity, to measure the potential across the resistor.**
4. **Check each exposed metallic part, and measure the voltage at each point.**
5. **Reverse the AC plug in the AC outlet and repeat each of the above measurements.**
6. **The potential at any point should not exceed 0.75 V RMS.**
   A leakage current tester (Simpson Model 229 equivalent) may be used to make the hot checks. Leakage current must not exceed 1/2 mA. In case a measurement is outside of the limits specified, there is a possibility of shock hazard, and thereceiver should be repaired and rechecked before it is returned to the customer.

Figure 1

Hot-Check Circuit



2. X-RADIATION

WARNING :

1. **The potential source of X-Radiation in TV sets is the High Voltage section and the picture tube.**
2. **When using a picture tube test fixture for service, ensure that the fixture is capable of handling 25.0 kV (For model with 13 inch CRT) or 30.0 kV (For model with 20 inch CRT) without causing X-Radiation.**

NOTE :

It is important to use an accurate periodically calibrated high voltage meter.

1. **Reduce the brightness to minimum.**
2. **Set the SERVICE switch to SERVICE .**
3. **Measure the High Voltage. The meter reading should indicate 23.5 kV±1.5 kV (For model with 13 inch CRT) or 28.5 kV±1.5 kV (For model with 20 inch CRT).**
   If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
4. **To prevent an X-Radiation possibly, it is essential to use the specified picture tube.**

HORIZONTAL OSCILLATOR DISABLE CIRCUIT TEST

SERVICE WARNING :

The test must be made as a final check before set is returned to the customer.

1. **With the rear cover removed, supply about a 90 V AC power source to the set, turn on the set.**
2. **Set the customer controls to normal operating positions.**

3. **Short between TP891 and TP892 on the Main circuit board with a jumper wire. Confirm that the picture goes out of horizontal sync.**
4. **If this does not occur, the horizontal oscillator disable circuit is not operating. Follow the Repair Procedures of horizontal oscillator disable circuit before the set is returned to customer.**

REPAIR PROCEDURES OF HORIZONTAL OSCILLATOR DISABLE CIRCUIT

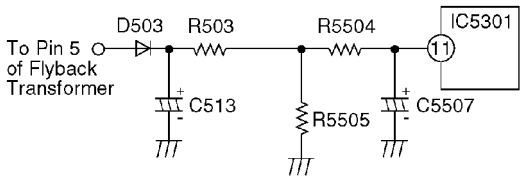
1. **Connect a DC voltmeter between capacitor C513 (+) on the Main circuit board and chassis ground.**
2. **If approximately +21.0 V (For model with 13 inch CRT) or +21.9 V (For model with 20 inch CRT) is not present at that point when 120 V AC is applied, find the cause. Check R503, R5505, C5507, C513 and D503.**
3. **Carefully check above specified parts and related circuits and parts. When the circuit is repaired, try the horizontal oscillator disable circuit test again.**

CIRCUIT EXPLANATION

HORIZONTAL OSCILLATOR DISABLE CIRCUIT

The positive DC voltage, supplied from the D503 cathode for monitoring high voltage, is applied to the IC5301 Pin11 through R503 and R5504. Under normal conditions, the voltage at IC5301 Pin 11 is less than approx 3 V. If the high voltage at FlybackTr Pin 5 exceeds the specified voltage, the positive DC voltage which is supplied from the D503 cathode also increases. The increased voltage is applied to IC5301 Pin11 through R503 and R5504. Due to the increased voltage at IC5301 Pin11, the horizontaloscillator frequency increases, the picture goes out of horizontal sync, the beam current decreases and the picture becomes dark in order to keep X-radiation under specification.

Figure 2



3. PREVENTION OF ELECTROSTATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistorsare semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. **Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, whichshould be removed for potential shock reasons prior to applying power to the unit under test.**
2. **After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.**
3. **Use only a grounded-tip soldering iron to solder or unsolder ES devices.**
4. **Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate electrical charge sufficient to damage ES devices.**
5. **Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.**
6. **Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparableconductive material).**
7. **Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.**

   CAUTION:

   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. **Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD)sufficient to damage an ES device).**

"NOTE to CATV system installer :
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding systemof the building, as close to the point of cable entry as practical."

4. OPERATION GUIDE

5. SERVICE NOTES (PLEASE READ)

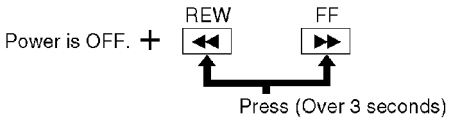
5.1. SERVICE NOTES

5.1.1. SIMPLIFIED FAULT FINDING DATA

Simplified Self-Diagnostic System facilitates finding the cause of the fault. A 4 digit for fault code and communication for I2C bus code will be displayed on TV screen.
The Simplified Fault finding data is stored in the Memory IC (IC6004). This data is cleared after it is displayed, and then the POWER button is pressed back on.

1. With power turned off, press FF and REW buttons on unit together for over 3 seconds.

Fig. 1-1



2. TV power goes on and the unit goes into service mode. 4 digit for fault code and communication for I2C bus code will be displayed.

Fig. 1-2

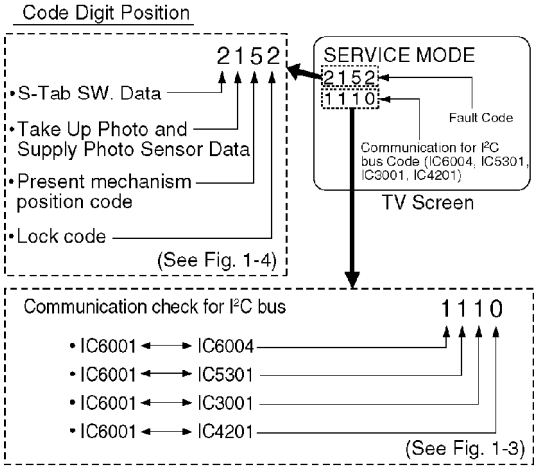


Fig. 1-3

(Communication check for I²C bus)

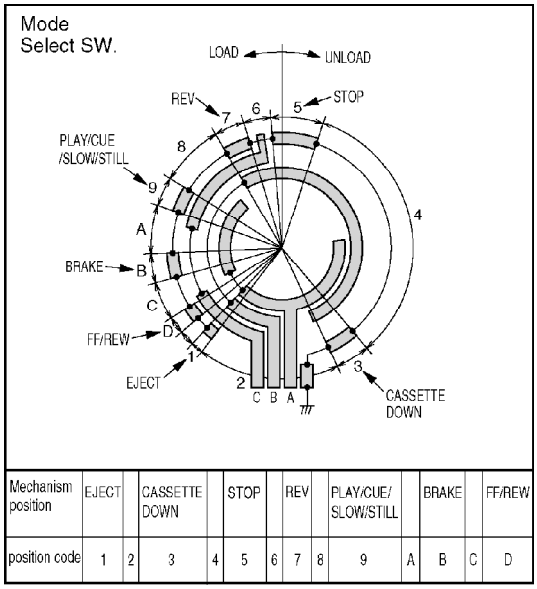
Explanation of Codes	Code No.			
Communication check for I²C bus (IC6001◄►IC6004) ----- **NG**	0			
OK	1			
Communication check for I²C bus (IC6001◄►IC5301) ----- **NG**		0		
OK		1		
Communication check for I²C bus (IC6001◄►IC3001) ----- **NG**			0	
OK			1	
Communication check for I²C bus (IC6001◄►IC4201) ----- **NG**				0
OK				1
Note: For Normal Audio models, 4th digit of code No. will not be displayed because IC4201 (Hi-Fi Audio IC) is not used.				

Fig. 1-4

(Fault Code)

Explanation of Codes	Code No.			
S-Tab SW. Data				
• S-Tab SW. is off.	1			
• S-Tab SW. is on.	2			
Take Up and Supply Photo Sensor Data				
• No light detected at either sensor.		1		
• Take Up Photo Sensor detected at beginning of tape.		2		
• Supply Photo Sensor detected at end of tape.		3		
• Light detected at both sensors.		4		
Present Mechanism Position Code				
Mechanism Position is indicated. (Refer to Fig. 1-5.)			1 2 3 4 5 6 7 8 9 A B C D	
Lock Code (See Note)				
• VCR is not in shut-off condition.				0
• Reel lock.				1
• Cylinder lock.				2
• Exceeds loading/unloading time. (Mechanism Lock)				3
• Exceeds Cassette loading/unloading time. (Cassette Lock)				
Tape Unloading (direction)			1	4
Tape Loading (direction)			2	4

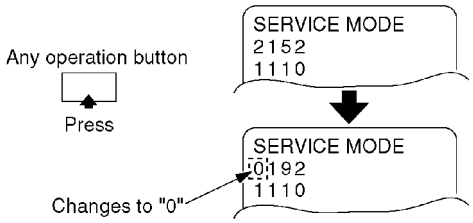
Fig. 1-5



Mechanism position	EJECT		CASSETTE DOWN		STOP		REV		PLAY/CUE/ SLOW/STILL		BRAKE		FF/REW
position code	1	2	3	4	5	6	7	8	9	A	B	C	D

3. Press any operation button except for POWER on either the unit, or the remote to detect that a key has been pressed.
The 1st digit changes to "0" only when key is detected.

Fig. 1-6



Note:

When 1 to 4 listed in Lock code occurs, the VCR stops and all VCR function buttons except for power become non-operational.

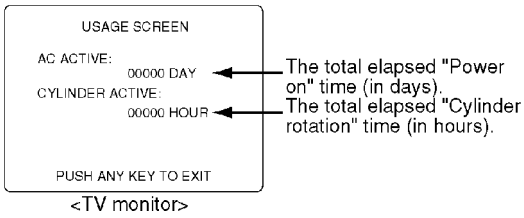
5.1.2. USAGE SCREEN MODE

Function displayed on the TV monitor:

- the total elapsed "Power on" time (in days)
- the total elapsed "Cylinder rotation" time (in hours)

1. With power turned on and no cassette, press STOP/EJECT button on unit and 7 key on remote together.
The USAGE SCREEN will be displayed on the TV Monitor.

Fig. 1-7



<TV monitor>

Note:

1. **After replacing the Cylinder Unit, press COUNTER RESET button on remote in this mode. Only Total elapsed "Cylinder rotation" time (in hours) will be cleared to 0.**
2. **To release from Usage Screen Mode, press any operation button on unit or insert a cassette tape in this mode. The unit will return to normal operation mode.**

5.1.3. SERVICE POSITION

5.1.3.1. Service Position

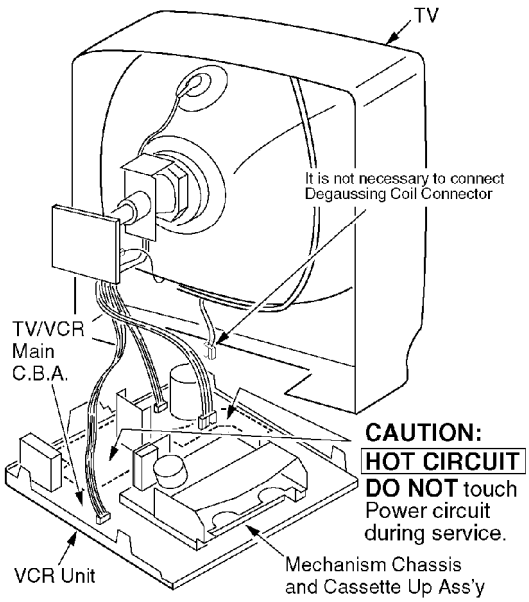
Service Position	Purpose
Service Position (1)	Mechanism check Mechanical adjustment Electrical adjustment
Service Position (2)	TV/VCR Main C.B.A. check

CAUTION:

HOT CIRCUIT (Primary circuit) exists on the TV/VCR Main C.B.A. Use extreme care to prevent accidental shock when servicing.

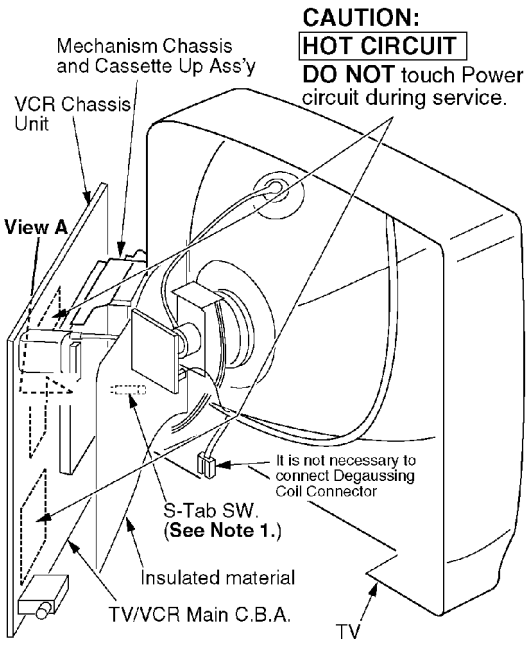
5.1.3.2. Service Position (1)

Fig. 2-1



5.1.3.3. Service Position (2)

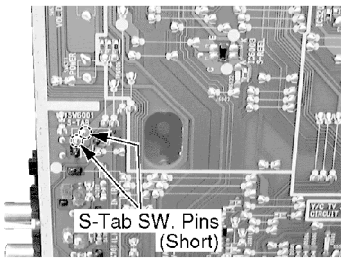
Fig. 2-2



Note:

1. **It is possible that the S-Tab SW. may not work correctly in Service Position (2). (Recording can not be done). In this case, short the S-Tab SW. Pins on the foil side of the TV/VCR Main C.B.A. to turn this SW. on.**

Fig. 2-3



TV/VCR Main C.B.A. (foil side)

View A

Alternative method:
Cover the S-Tab SW. with masking tape.

2. **When disassembling/assembling, refer to "CABINET SECTION" in DISASSEMBLY/ASSEMBLY PROCEDURES.**

5.1.4. HOT CIRCUIT

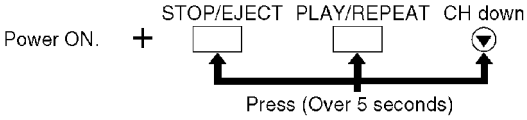
Primary circuit exists on the TV/VCR Main C.B.A.
This circuit is identified as "HOT" on the C.B.A. and in the Service Manual. Use extreme care to prevent accidental shock when servicing.

5.1.5. SERVICE MODE

In order to inhibit detection of the Supply & Takeup Photo Transistors, Reel Sensor, and Cylinder Lock, press and hold STOP/EJECT, PLAY/REPEAT, and CH down buttons on the unit together

over 5 seconds in power on condition.

Fig. 3



The unit goes into service mode.
In this mode, Mechanism movement can be confirmed. When removing Cassette Up Ass'y, it can be confirmed without a cassette.
To release from this mode, press POWER button off or disconnect AC Plug.

5.1.6. DEFEATING THE AUTO TRACKING

To defeat the Auto Tracking Function, place the instrument in the STOP mode and place a jumper between TP6003 and TP6009 on the TV/VCR Main C.B.A. The tracking will be placed in the neutral position.

5.1.7. CAUTION FOR INSTALLATION OF VCR UNIT

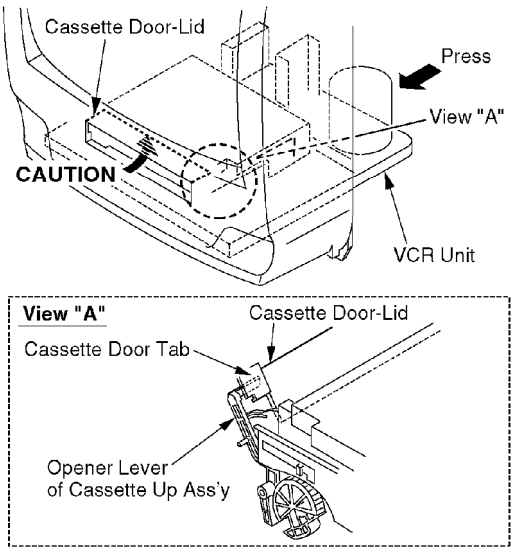
CAUTION:

Opener Lever may be damaged when VCR Unit is installed, with Cassette Door-Lid and Opener Lever of Cassette Up Ass'y set incorrectly.

Install the VCR Unit as follows:

1. **Swing the Cassette Door-Lid all the way open until the Cassette Door tab clears the Opener Lever.**
2. **Make sure that all guide tabs are aligned properly. Then, press the VCR Unit straight in.**

Fig. 4

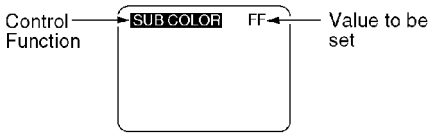


5.1.8. HOW TO INITIALIZE MEMORY IC

After the Memory IC (IC6004) or TV/VCR Main C.B.A. is replaced, be sure to set the Default value to Memory IC as shown in "Memory IC Reference Table" below.

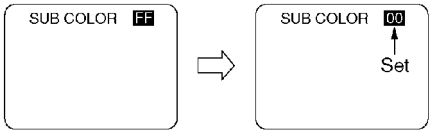
1. **Press and hold STOP, PLAY, and VOL DOWN buttons on the unit together over 5 seconds with no cassette inserted.**
   The adjustment overlay will appear to Enter EVR Adjustment mode.

Fig. 5-1



2. **Set the Default value of all Control functions using a remote control as shown in "Memory IC Reference Table."**
   Note:
   For Selecting Control functions and setting Default value, refer to "How to enter EVR adjustment mode" and "HOW TO ENTER EVR PG SHIFTER ADJUSTMENT MODE" in ELECTRICAL ADJUSTMENT procedures.

Fig. 5-2



3. **Press and hold STOP, PLAY, and VOL DOWN buttons on the unit together over 5 seconds again or press the POWER button OFF to release EVR Adjustment Mode.**
   The Default value will be written to Memory IC (IC6004).
4. **Perform all EVR Adjustments. (Refer to "EVR (Electronic Variable Register) ADJUSTMENT WITH THE REMOTE CONTROL" in ELECTRICAL ADJUSTMENT procedures.)**

Memory IC Reference Table

Control functions	Address	Range	Default
SUB COLOR	00	C0 - FF, 00 - 3F	**00**
SUB TINT	01	E0 - FF, 00 - 1F	**00**
SUB BRIGHT	02	C0 - FF, 00 - 3F	**F0**
CONTRAST	03	C1 - FF, 00	**00**
SUB SHARPNESS	04	E0 - FF, 00 - 1F	**00**
R CUT -OFF	05	00 - 7F	**1E**
G CUT -OFF	06	00 - FD	**3C**
B CUT -OFF	07	00 - FD	**3C**
G DRIVE	08	00 - 7F	**40**
B DRIVE	09	00 - 7F	**40**
SUB CONTRAST	0A	00 - 0F	**06**
H CENTER	0B	00 - 0F	**08**
SUB V	0C	00 - 03	**00**
V SIZE	0D	00 - 7F	**40**
V POSITION	0E	00 - 7F	**40**
ANR CTL	10	00 - EF	**89**
PICTURE CTL	11	00 - EF	**86**
VV COLOR	12	C0 - FF, 00 - 3F	**00**
VV TINT	13	E0 - FF, 00 - 1F	**00**
VV SHARPNESS	14	E0 - FF, 00 - 1F	**F8**
PG SHIFTER	15	01 - FD	**80**
FM ANT	18	00 - 01	**00**

Note:

1. Address is not displayed on the TV screen.
   Other Addresses except above are not used.

5.1.9. METHOD FOR LOADING/UNLOADING OF MECHANISM

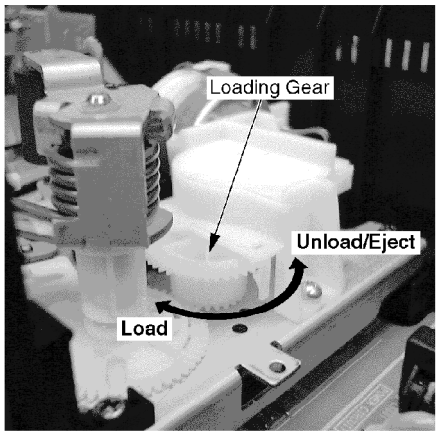
5.1.9.1. (Manual Method)

Turn the Loading Gear clockwise (for loading) or counterclockwise (for unloading) using needlenose pliers etc.

Note:

Do not use this method if Mechanism is jammed or locked.

Fig. 6-1



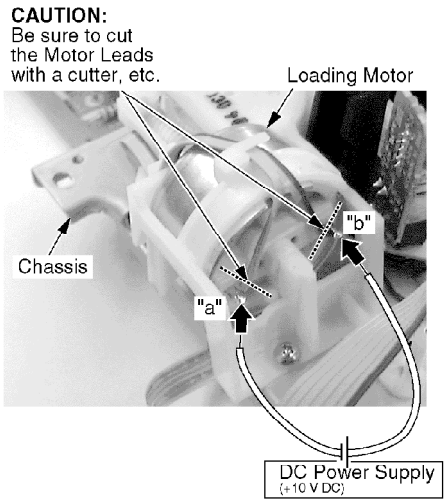
5.1.9.2. (Electrical Method)

Apply +10.0 V DC Power Supply to the Loading Motor terminals.
Loading
DC + to Portion "a," DC - to Portion "b"
Unloading
DC - to Portion "a," DC + to Portion "b"

CAUTION:

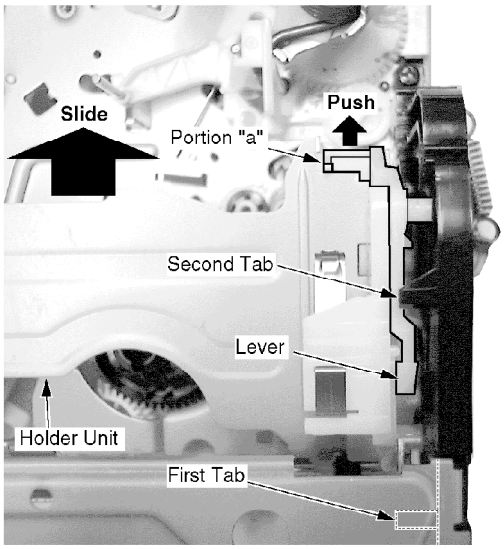
Before applying DC Power Supply, be sure to cut the Motor Leads with a cutter, etc.
Otherwise, the Loading Motor Drive IC (IC2501) may be damaged.
When reconnecting the Motor Leads, solder at below / 320 °C for less than 3 seconds.

Fig. 6-2



When loading without a cassette, push Portion "a" on the Holder Unit of Cassette Up Ass'y so that the Lever clear the First Tab and Second Tab.

Fig. 6-3



5.1.10. HOW TO REMOVE A JAMMED TAPE

CAUTION:

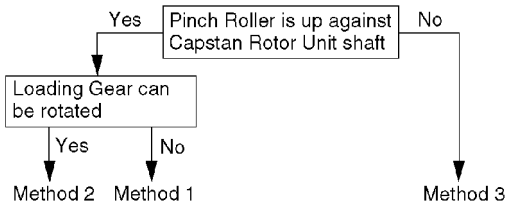
Wiper Arm Unit may be damaged or its spring may be out of place when the jammed tape is removed by force.

Remove a jammed tape as follows:

5.1.10.1. Manual Method

When a tape jam is encountered, check the tape loading condition and use the following procedure to remove a tape jam.

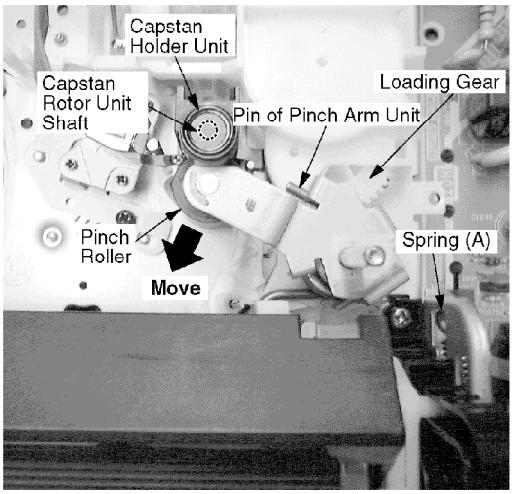
Fig. 7-1



5.1.10.1.1. Method -1:

1. **Move the Pinch Roller Unit out by unhooking the Pin of Pinch Arm Unit so that the Pinch Roller is separated from the Capstan Rotor Unit shaft.**

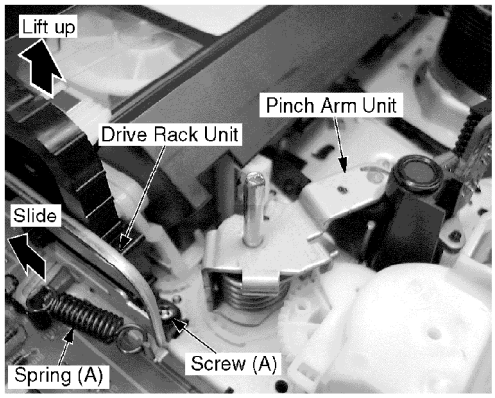
Fig. 7-2



Top View

2. **Remove the tape from the tape path.**
3. **Rewind the tape into the cassette by rotating the Center Clutch Unit counterclockwise.**
4. **Unhook Spring (A) of the Drive Rack Arm.**
5. **Remove Screw (A).**
6. **Lift the Cassette Up Ass'y. While pulling the Cassette Up Ass'y out far enough so that it clears the Drive Rack Arm, slide the Drive Rack Unit as indicated by the arrow to remove the cassette tape from the Cassette Up Ass'y.**
7. **Check the cause of mechanical trouble and repair.**

Fig. 7-3



5.1.10.1.2. Method -2:

1. **Rotate Loading Motor counterclockwise with needlenose pliers, etc. so that the Pinch Roller is separated from the shaft of the Capstan Rotor Unit.**
2. **Perform Step 2 through Step 7 of Method -1.**

5.1.10.1.3. Method -3:

1. **Perform Step 2 through Step 7 of Method -1.**

Note:

After repairing mechanical trouble, make sure that all gear alignments are correct, especially the Wiper Arm Unit and Drive Rack Unit of Cassette Up Ass'y. (Refer to "EJECT Position Confirmation"in DISASSEMBLY/ASSEMBLY PROCEDURES.)

5.1.10.2. Electrical Method

Electrical method can only be performed when the mechanism is moved by rotating the Loading Gear.

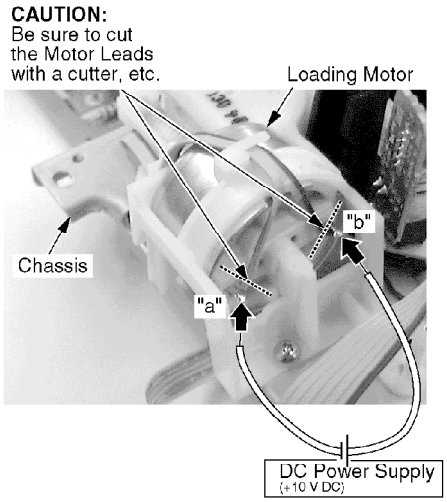
CAUTION:

1. **Before applying DC Power Supply, be sure to cut the Motor Leads with a cutter, etc.**
   Otherwise, the Loading Motor Drive IC (IC2501) may be damaged.
   When reconnecting the Motor Leads, solder at below / 320 °C for less than 3 seconds.
2. **If loading does not start in approx. 2 seconds after DC Power Supply is applied, DO NOT continue to apply DC Power Supply. Instead, perform "Manual Method."**

1. **Be sure to cut the Motor Leads with a cutter, etc.**
2. **Apply +10.0 V DC Power Supply to the Loading Motor terminals.**

3. When the Loading Posts reach the fully unloaded position, remove the Power Supply.

Fig. 8



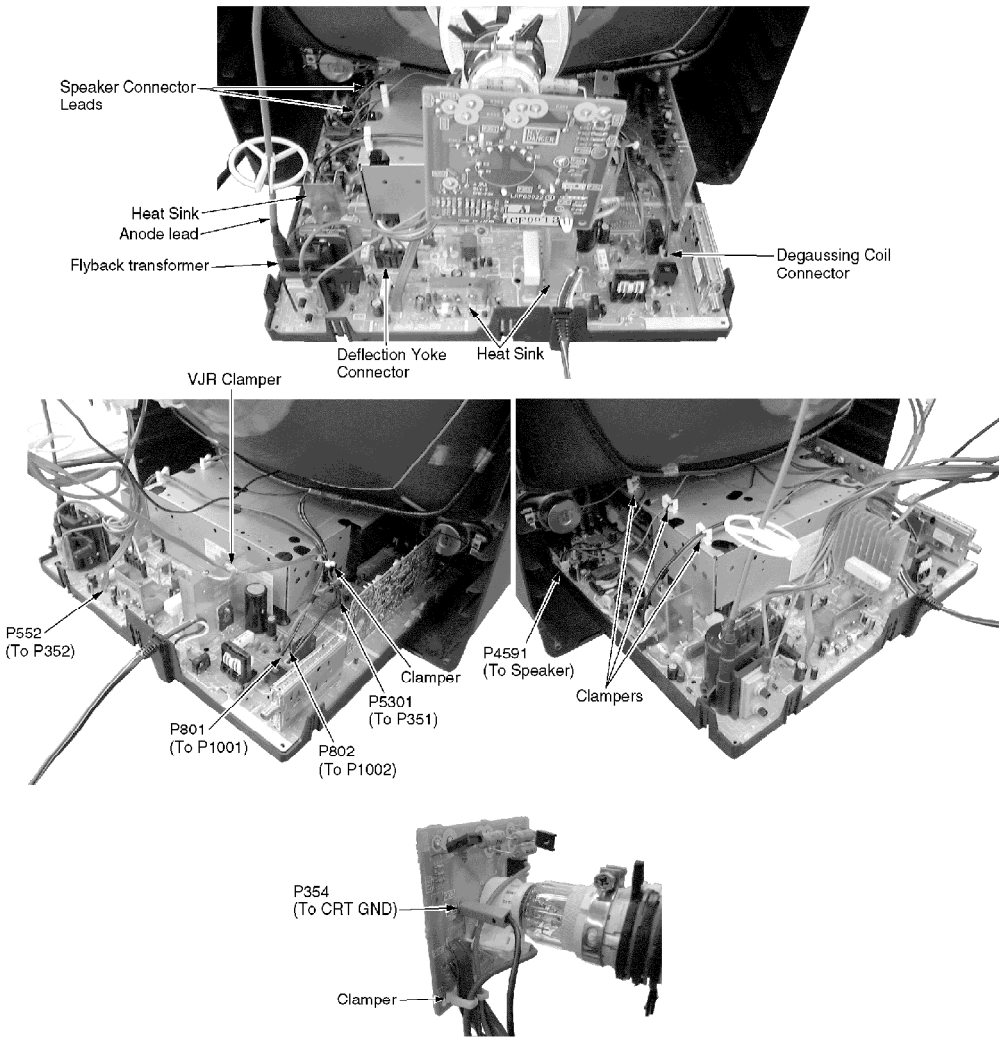
4. Rewind the tape into the cassette by turning the Center Clutch Unit counterclockwise.
5. Eject the cassette by applying +10.0 V DC Power Supply again.

5.1.11. WIRE AND LEAD POSITION DIAGRAM

Fig. 9

After servicing, make sure that all wires, leads, and clampers are placed in their original position. It is important for the best operation of the unit.

Note:
No lead wires or flat cables should touch any heating parts or the Heat Sink Plate.
Use extreme care especially for followings.



5.1.12. HOW TO SET TRACKING TO THE NEUTRAL POSITION

Ejecting the cassette tape and then reinserting it will reset the tracking to the Neutral position.

5.1.13. BLACK SCREWS ON THE CHASSIS

Black Screws are used on the Mechanism Chassis to identify screws that require adjustment.

5.1.14. HOW TO RESET ALL COMBINATION VCR MEMORY FUNCTIONS

To reset (clear) the select language, channel auto set and set clock functions to their initial power on condition (power on, no cassette inserted), hold down the PLAY and FF buttons on the unit together for more than 5 seconds.
Power will shut off.

5.1.15. HOW TO CONFIRM AUTO CLOCK SET FEATURE

1. Connect an RF cable from the output of one unit to the input of the test unit.

2. Select corresponding RF channels.

3. Playback a recording of P.B.S. channel including clock set data and confirm this feature.

5.1.16. VARIABLE VOLTAGE ISOLATION TRANSFORMER

An Isolation Transformer should always be used during the servicing of Combination VCR whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personalinjury from electrical shocks. It will also protect Combination VCR from being damaged by accidental shorting that may occur during servicing.
Also, when troubleshooting the above type of Power Supply Circuit, a variable isolation transformer is required in order to increase the input voltage slowly.

5.1.17. SPECIAL NOTE

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

5.1.18. REPLACEMENT PROCEDURE FOR LEADLESS (CHIP) COMPONENTS

The following procedures are recommended for the replacement of the leadless components used in this unit.

1. Preparation for replacement
   - A. Soldering Iron
     Use a pencil-type soldering iron that uses less than 30 watts.
   - B. Solder
     Eutectic Solder (Tin 63 %, Lead 37 %) is recommended.
   - C. Soldering time
     Do not apply heat for more than 4 seconds.
   - D. Preheating
     Leadless capacitor must be preheated before installation. - (266 ° F ~ 302 °F)
     (130 °C ~150 °C) for about 2 minutes.

   Note:
   - A. Leadless components must not be reused after removal.
   - B. Excessive mechanical stress and rubbing of the component electrode must be avoided.

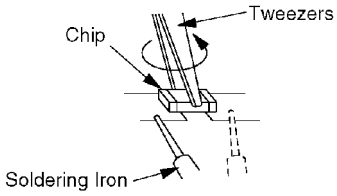
2. Removing the leadless component
   Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes is melted, remove the leadless component with a twisting motion.

   Note:

A. Do not attempt to lift the component off the board until the component is completely disconnected from the board by a twisting action.

B. Be careful not to break the copper foil on the printed circuit board.

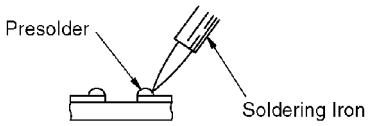
Fig. 10-1



3. Installing the leadless component

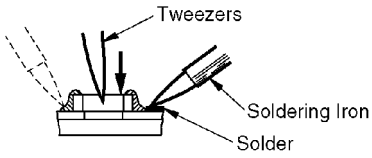
A. Presolder the contact points on the circuit board.

Fig. 10-2



B. Press the part downward with tweezers and solder both electrodes as shown below.

Fig. 10-3



Note:

Do not glue the replacement leadless component to the circuit board.

5.1.19. MODEL NO. IDENTIFICATION MARK

Use Marks shown in the chart below to distinguish the different models included in this Service Manual.

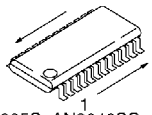
MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

Note:
Refer to Item 3 of Schematic Diagram Notes of Schematic Diagram and Circuit Board Layout Notes, for mark "Z."

5.2. IC, TRANSISTOR AND CHIP PART INFORMATION

GENERAL C.B.A. / ASS'Y PARTS

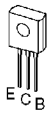
2SA1321, 2SC945A, 2SA733, 2SA1767, 2SB1221, 2SC1684, 2SC1473, 2SC1473A, 2SC2482, 2SC2482KT6, 2SC2785, 2SC4015, 2SD2159, 2SA564A



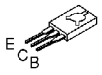
MN3885S, AN3846SC, AT24C01A10SI, KS24C011IS, M24C01-MN6, BR24C01AFWE2, AN3361SB

CRT C.B.A.

2SC3619

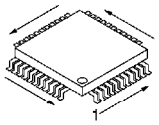


2SC3063

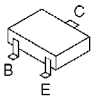


2SC3271F-H

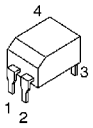
TV/VCR MAIN C.B.A.



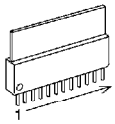
AN5368FB, AN3479FBP-A, AN5367FB, MN101D07HCB



2SD601, 2SA1576A106R, 2SD601A, 2SA1037K146R, 2SC4081T106R, 2SB709A, 2SC2412K1, 2SD1819A, 2SD235800A, 2SB1218A, 2SD2097TV2R



TLP621GR, ON3131-R, ON3131-R.KT, ON3131-S.KT

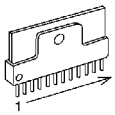


LA4285

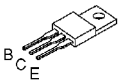
XC61CC4702MR, RN5VS47CA-TR, PST3147NR

2SB1322A

2SD2259, 2SD1458, 2SD1858

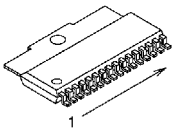


LA7837

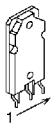


2SC4533LP.KT

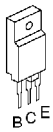
2SD1581



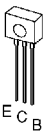
AN3808K



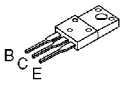
STR30130



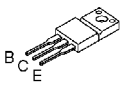
2SD2586LBK



2SA1175, 2SC3311A, 2SA1309A



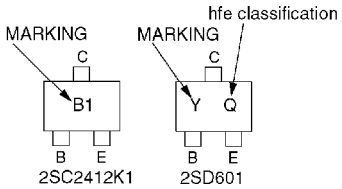
2SD2578



2SC5130LF608

HOW TO READ THE IDENTIFICATION MARK OF CHIP COMPONENTS.

MARKING	PART NO.	MARKING	PART NO.
B	2SB709A	Y	2SD601
B	2SB1218A	Z	2SD1819A
B	2SC4081T106R	Z	2SD601A
F	2SA1037K146R	B1	2SC2412K1
F	2SA1576A106		



HOW TO READ THE VALUES OF THE CYLINDRICAL TYPE CHIP COMPONENTS.

The widest color band must be read first for value.

1. RESISTOR
   There are two types (ERD10LLJ... and ERD10TLJ...) of chip parts.
   1) ERD10LLJ: Refer to above type.
   2) ERD10TL: The narrow color band must be read first for value.
   If this part is included in the parts list, be sure that the color band is read properly when servicing.
2. CAPACITOR
   Because of the width of the color bands, the reading direction cannot be specified. However, the color band can be read on either side. Be sure to confirm the value using the schematic diagram.

CAUTION :
Once chip parts are removed, they must not be reused. Always use a new part when installing a chip part.

5.3. MAINTENANCE CHART

The following chart indicates the schedule for the periodic maintenance which will prolong the life of the machine.
Since the parts are keyed to the Inner Parts Location Diagram, when you replace the following parts, refer to the diagram.

	Parts Name	Unit or Part No.	Hour									
			500	1000	1500	2000	2500	3000	3500	4000	4500	5000
1	Cylinder Unit	VEGS0454	●	◎	●	◎	●	◎	●	◎	●	●
2	Audio Control Head Unit	VEHS0596	●	●	●	●	●	●	●	◎	●	●
3	Pinch Arm Unit	VXLS1094	●	●	◎	●	●	◎	●	●	◎	●
4	S Reel Table	LSDR0002	●	●	●	●	●	●	●	◎	●	●
5	T Reel Table	LSDR0003	●	●	●	●	●	●	●	◎	●	●
6	S Reel Shaft	————				○				○		
7	T Reel Shaft	————				○				○		
8	Capstan Rotor Unit	VXPS0391										◎
9	Capstan Shaft	————	●	●	●	●	●	●	●	●	●	●
10	T Brake Unit	VXLS1100				◎				◎		
11	Motor Block Unit	VXKS0901				△				◎		
12	Tape Transport	————	●	●	●	●	●	●	●	●	●	●
13	Loading Post Base-S Unit	VXDS0213				△				△		
14	Loading Post Base-T Unit	VXDS0214				△				△		
15	Main Cam Gear Kit	VVGS0009				△				△		
16	Capstan Belt	LSDV0007				◎				◎		
17	Tension Arm Unit	VXLS1102				◎				◎		

※ NOTE

Symbol	Maintenance	Requirement	Remark
●	Cleaning	Ethanol or Cleaning Liquid (Purchased Locally)	Wipe dirt from the parts using soft cloth impregnated with Ethanol. Note : When cleaning rubber parts, avoid using excessive alcohol since it may accelerate deterioration of these parts. After cleaning with alcohol, wipe the alcohol away quickly and thoroughly.
◎	Replacement	————	————
○	Lubrication	High Quality Spindle Oil (Purchased Locally)	Supply one or two drops of oil.
△	Greasing	Grease	Wipe away the old grease and apply new grease.

6. DISASSEMBLY/ASSEMBLY PROCEDURES

6.1. CABINET SECTION

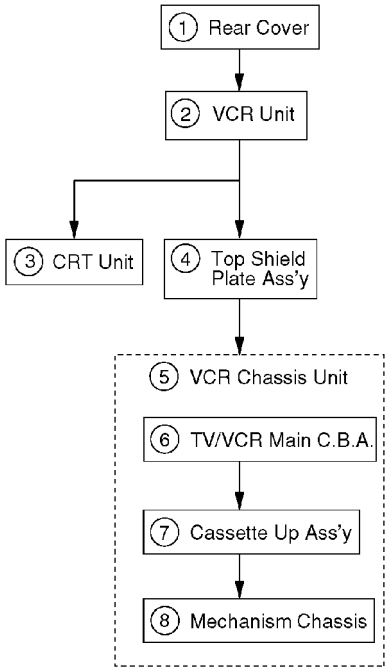
6.1.1. Disassembly Flowchart

Perform all disassembly procedures in the order described in the "Disassembly Flowchart" shown below. When reassembling, use the reverse procedure.

CAUTION:

Disconnect AC plug before disassembly.

Fig. D1



6.1.2. Disassembly Method

STEP /LOC. No.	PART	Fig. No.	REMOVE	Note
1	Rear Cover	D2	6(S-1)	---
2	VCR Unit	D3 D4	Anode Cap, P354, CRT C.B.A., Deflection Yoke Connector, Degaussing Coil Connector, Clampers, P4591, 2 Tabs, 2 Guide Tabs	1
3	CRT Unit	D2	4(S-2)	2
4	Top Shield Plate Ass'y	D5	4(S-3), (S-4), (S-5), Grounding Wire	---
5	VCR Chassis Unit	D5	(S-6), 2(S-7), 2(S-8), 6(L-1), Grounding Plate	3
6	TV/VCR Main C.B.A.	D5	P3001, P6202, P6201, P4001	4
7	Cassette Up Ass'y	D5	2(S-9), (S-10), (P-1), (L-2)	5
8	Mechanism Chassis	D5	----------	---
	A	B	C	D	E

How to read chart shown above:
A:Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
These numbers are also used as the identification (location) No. of parts in Figures.
B: Part to be removed or installed.
C: Fig. No. showing Procedure or Part Location.
D: Identification of part to be removed, unhooked, unlocked, released, unplugged or unsoldered.

6(S-1) = 6 Screws (S-1), 6(L-1) = 6 Locking Tabs (L-1),
(P-1) = Spring (P-1)
E: Refer to "Notes in chart."

Fig. D2

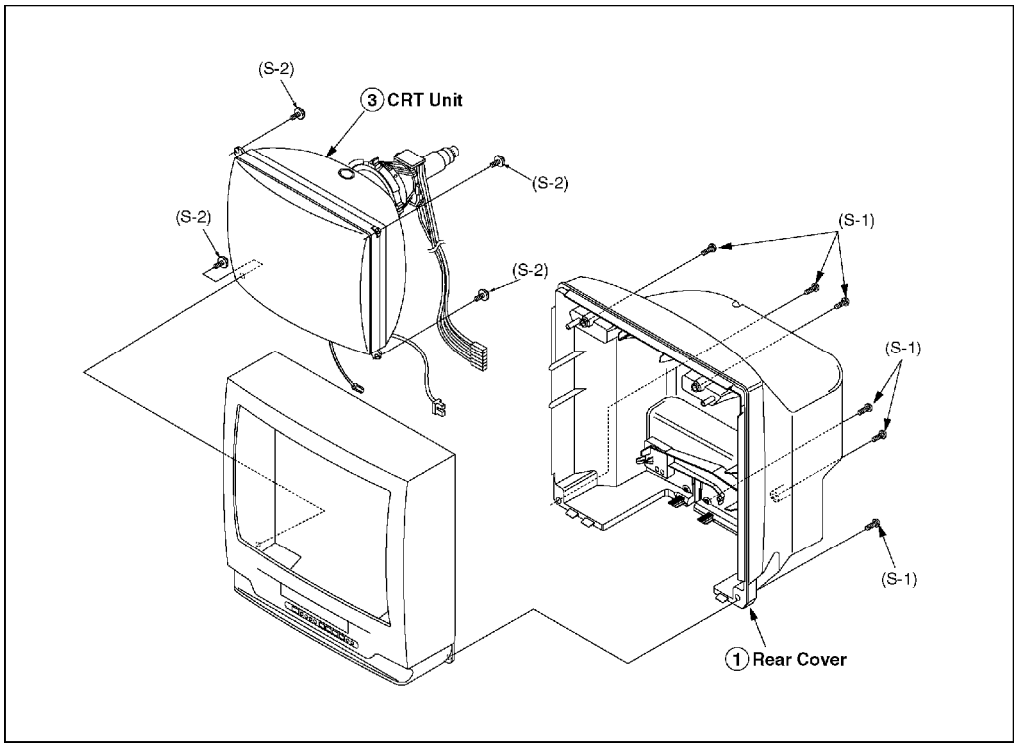


Fig. D3

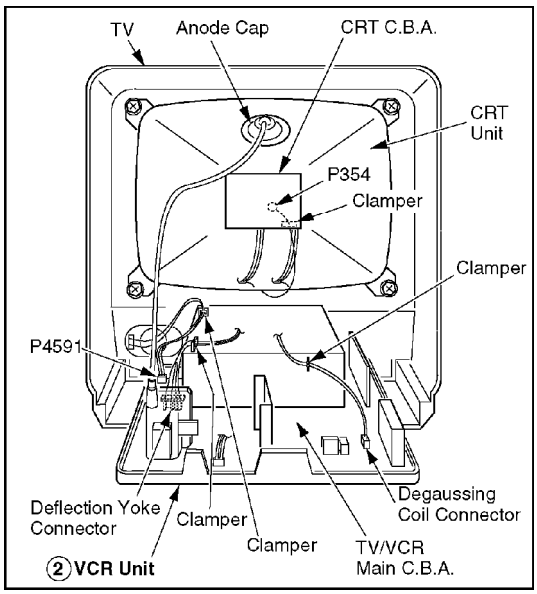


Fig. D4

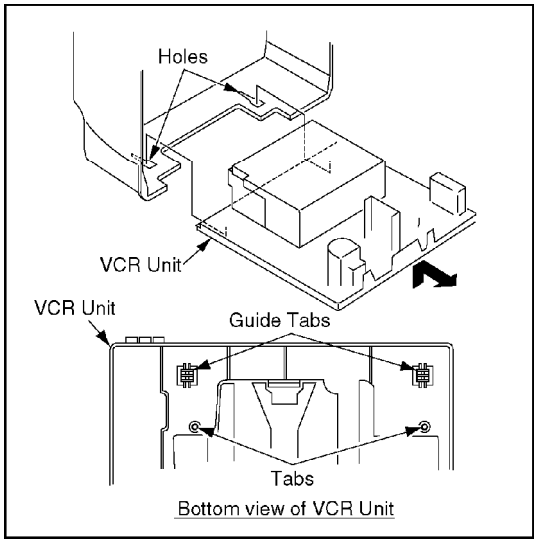
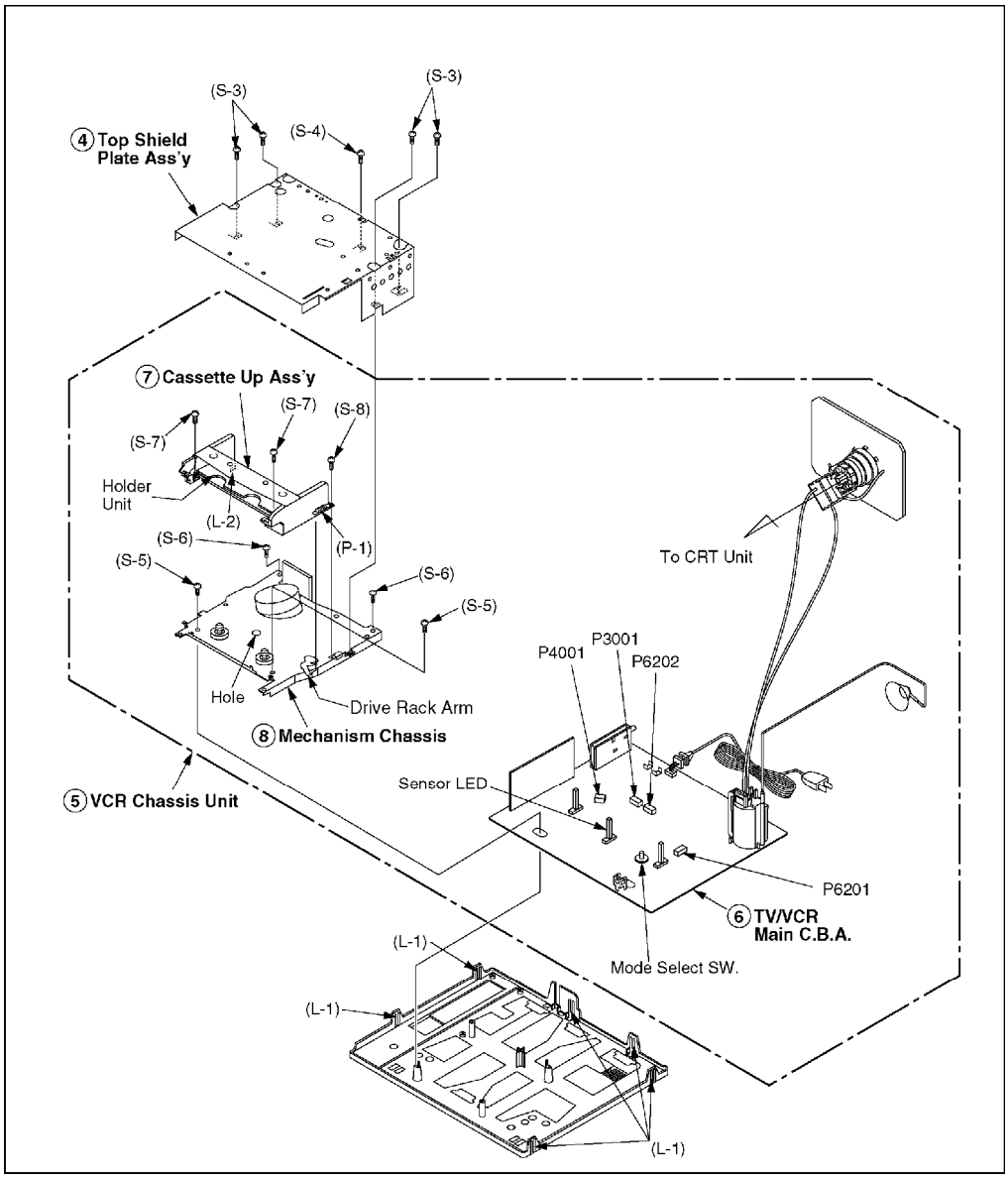

Holes
VCR Unit
VCR Unit
Guide Tabs
Tabs
Bottom view of VCR Unit

Fig. D5


(S-3)
(S-3)
(S-4)
④ Top Shield Plate Ass'y
⑦ Cassette Up Ass'y
(S-7)
(S-7)
(S-8)
Holder Unit
(L-2)
(P-1)
(S-6)
(S-5)
(S-6)
(S-5)
Hole
Drive Rack Arm
⑧ Mechanism Chassis
⑤ VCR Chassis Unit
To CRT Unit
P4001
P3001
P6202
Sensor LED
P6201
⑥ TV/VCR Main C.B.A.
Mode Select SW.
(L-1)
(L-1)
(L-1)

6.1.2.1. Notes in chart

1. Installation of VCR Unit

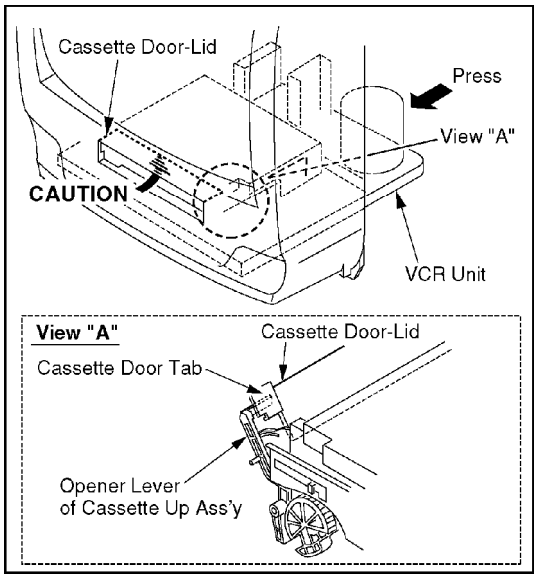
CAUTION:

Opener Lever may be damaged when VCR Unit is installed, with Cassette Door-Lid and Opener Lever of Cassette Up Ass'y set incorrectly.

A. When installing the VCR Unit, swing the Cassette Door-Lid all the way open until the Cassette Door tab clears the Opener Lever.

B. Make sure that all guide tabs are aligned properly. Then, press the VCR Unit straight in.

Fig. D6



2. Removal of CRT Unit

Place the Unit face down on a soft cloth before removing the CRT Unit.

3. Installation of VCR Chassis Unit

When installing 2 Screws (S-5), slide the Holder Unit of the Cassette Up Ass'y (Refer to "METHOD FOR LOADING/ UNLOADING OF MECHANISM" in Service Notes) to tighten screws. Then,slide it back to the EJECT Position.

Make sure that Mechanism and Cassette Up Ass'y are in the EJECT Position. (Refer to "EJECT Position Confirmation" in DISASSEMBLY/ASSEMBLY PROCEDURES.)

4. Removal of TV/VCR Main C.B.A.

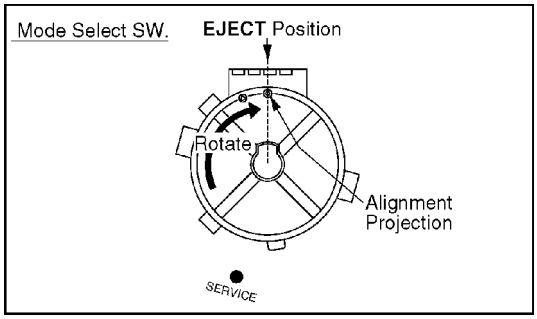
Work carefully so as not to break Sensor LED when lifting the Mechanism Chassis and Cassette Up Ass'y.

Installation of Mechanism Chassis and Cassette Up Ass'y onto TV/ VCR Main C.B.A.

A. Make sure the Mode Select SW. on the TV/VCR Main C.B.A. is in EJECT position. If not, rotate the Mode Select SW. until the alignment projection is in the EJECT Position.

B. Make sure the Mechanism and Cassette Up Ass'y are in the EJECT Position. (Refer to "EJECT Position Confirmation" in DISASSEMBLY/ASSEMBLY PROCEDURES.)

Fig. D7



C. Install the Mechanism Chassis and Cassette Up Ass'y straight onto the TV/VCR Main C.B.A. so that the Sensor LED clears the hole in the Mechanism Chassis and that 4 Connectors (P6201, P6202, P3001, and P4001) are aligned andseated securely.

5. Installation of Cassette Up Ass'y

A. Confirm that the Locking Tab (L-2) under the Cassette Up Ass'y is in Hole on the Mechanism Chassis when installing the Cassette Up Ass'y. Then, slide the Cassette Up Ass'y towards the back.

B. When installing 2 Screws (S-7), slide the Holder Unit (Refer to "METHOD FOR LOADING/UNLOADING OF MECHANISM" in Service Notes) to tighten screws. Then, slide it back to the EJECT Position.

C. Hook Spring (P-1) to the Drive Rack Arm on the Mechanism Chassis.

6.2. MECHANISM SECTION

6.2.1. Disassembly/Reassembly Method

This procedure starts with the condition that the cabinet parts and TV/VCR Main C.B.A. have been removed.
When reassembling, perform the step(s) in the reverse order.
Perform all disassembly/reassembly and alignments procedures in EJECT Position.

Step(s) to be No.	Prior Step(s)	Part	Fig. No.	Remove	Alignment/Adjustment
①	----------	Grounding Plate Unit	J2-1	(S-1)	Adjustment
②	----------	Full Erase Head	J2-1	(L-1)	
③	1	Cylinder Unit	J2-1	P4092, Unsolder, 2(S-2), 3(S-3), Head Amp C.B.A.	TAPE INTERCHANGEABILITY Adjustment
④	----------	Capstan Belt	J3-1	-	
⑤	----------	Support Angle	J3-1	(S-4), (S-5)	
⑥	5	Intermediate Gear B	J3-1	(L-2)	Gear Alignment
⑦	4,5,6	Main Cam Gear	J3-1	Main Cam Push Nut	Gear Alignment
⑧	4	Center Clutch Unit	J4-1	(W-1)	
⑨	4,8	Changing Gear Spring	J4-1	-	
⑩	4,8,9	Changing Gear	J4-1	-	
⑪	4,8,9,10	Idler Arm Unit	J4-1	-	
⑫	----------	Reel Gear	J5-1	2(L-3)	
⑬	4,5,6,7,8,9,10	Main Rod	J5-1	(W-2), (L-4)	Gear Alignment
⑭	----------	Stopper Angle	J6-1	(S-6)	
⑮	4,5,14	Capstan Rotor Unit	J6-1	-	
⑯	4,5,14,15	Oil Seal	J6-1	-	
⑰	4,5,14,15	Capstan Stator C.B.A.	J6-1	P2503, 2(S-7)	
⑱	----------	MR Head	J6-1	(S-8), Unsolder	MR HEAD GAP Adjustment
⑲	4,8,9,10,13	T Loading Arm Unit	J7-1	-	Gear Alignment
⑳	4,5,6,7,8,9,10,13,19	S Loading Arm Unit	J7-1	-	Gear Alignment
㉑	----------	T Brake Unit	J8-1	-	
㉒	----------	Tension Control Arm Unit	J8-1	3(L-5)	
㉓	21	T Reel Table	J8-1	-	
㉔	22	S Reel Table	J8-1	-	
㉕	22	Tension Arm Unit	J8-1	2(L-6), (P-1), (P-2)	
㉖	22,25	Loading Post Base-T Unit	J9	-	P2 AND P3 POST HEIGHT, TAPE INTERCHANGEABILITY Adjustment
㉗	22,25	Loading Post Base-S Unit	J9	-	
㉘	----------	Opener Piece	J10-1	2(L-7)	
㉙	4,5,6,7	Drive Rack Arm	J10-1	-	
㉚	28	Pinch Arm Unit	J10-1	-	
㉛	28,30	P5 Arm Unit	J10-1	-	
㉜	5,6,28	Intermediate Gear A	J10-1	-	Gear Alignment
㉝	38	Motor Block Unit	J11-1	2(S-9)	
㉞	----------	Audio Control Head Unit	J11	(S-10)	TAPE INTERCHANGEABILITY Adjustment
㉟	5,6,28,30,32,33	Lift Gear	J11	-	
㊱	4,5,14,15,33	Capstan Holder Unit	J11	3(S-11)	
㊲	22,25	Tension Arm Boss	J11	(L-8)	
㊳	----------	Cleaner Arm Unit	J11	(L-9)	

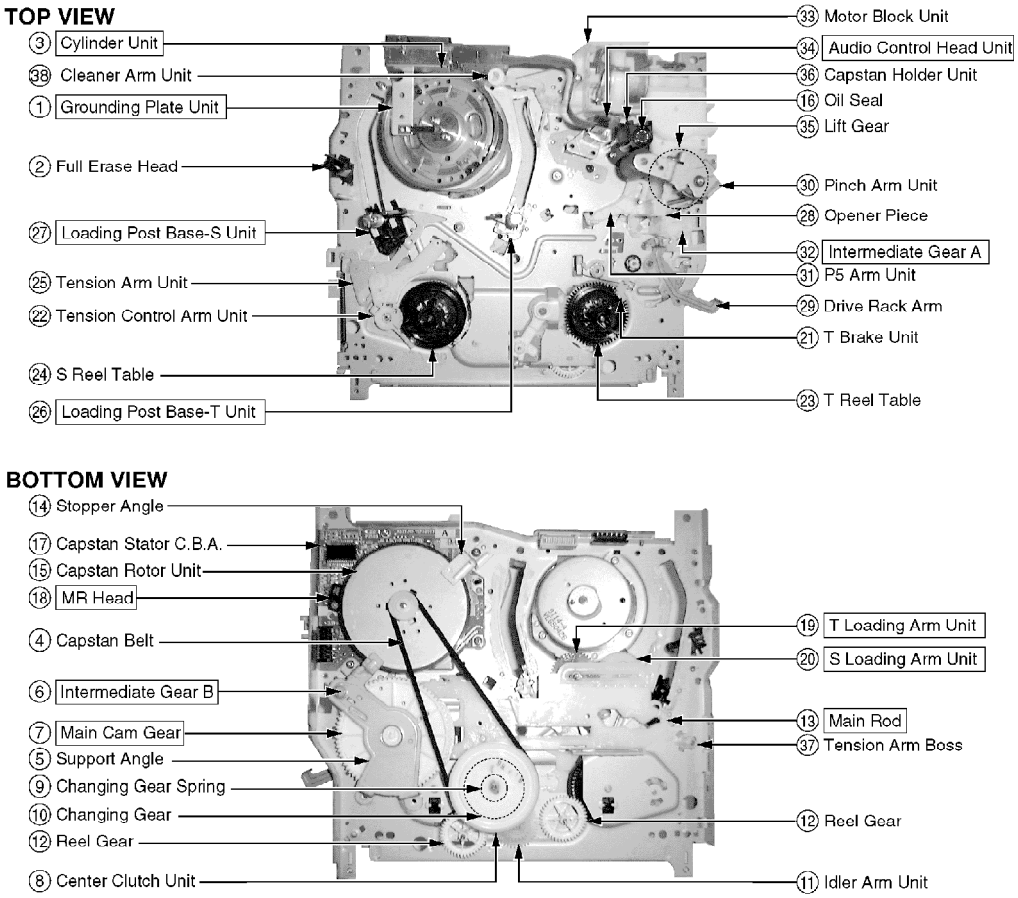
A B C D E F

How to read chart shown above:
A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
These numbers are also used as the identification (location) No. of parts in Figures.
B: Steps to be completed prior to the current step.
C: Part to be removed or installed.
D: Fig. No. showing Procedure or Part Location.
E: Identification of part to be removed, unhooked, unlocked, released, unplugged or unsoldered.
(S-1) = Screw (S-1), (L-1) = Locking Tab (L-1),
(W-1) = Washer (W-1), (P-1) = Spring (P-1),
(C-1) = Cut Washer (C-1)
F: Alignment/Adjustment which is required when installing or replacing each Parts.

6.2.2. Inner Parts Location

Note: BOX indicates alignment (Gear Alignment or Mechanical Adjustment) required when a part is replaced.

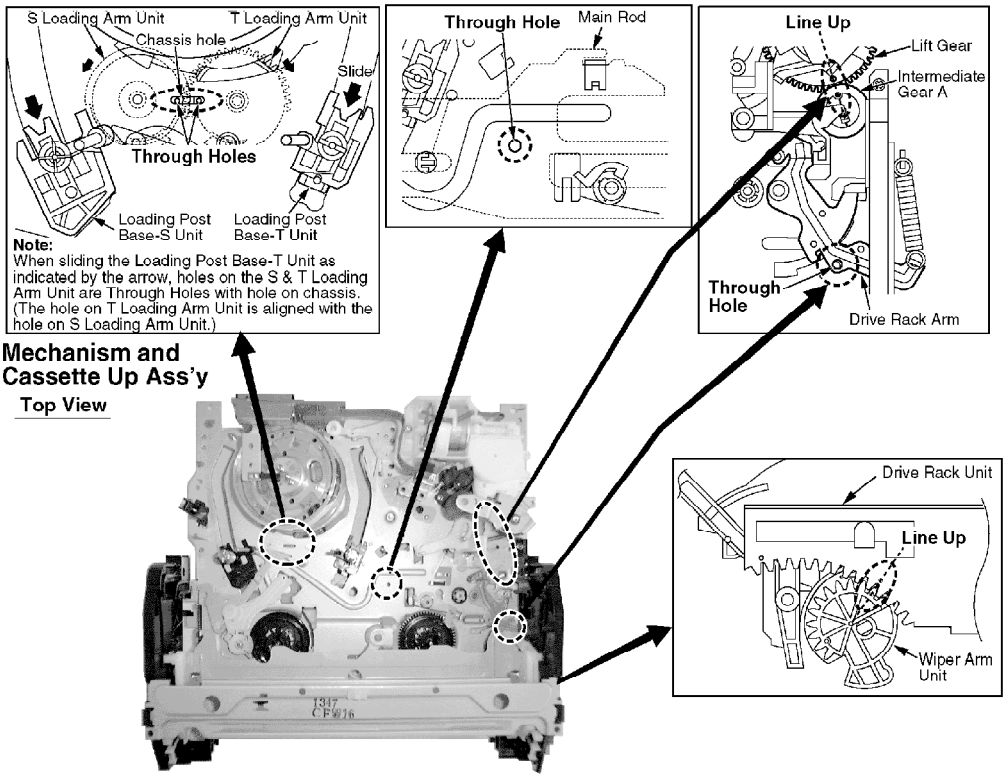
Fig. J1-1



6.2.3. EJECT Position Confirmation

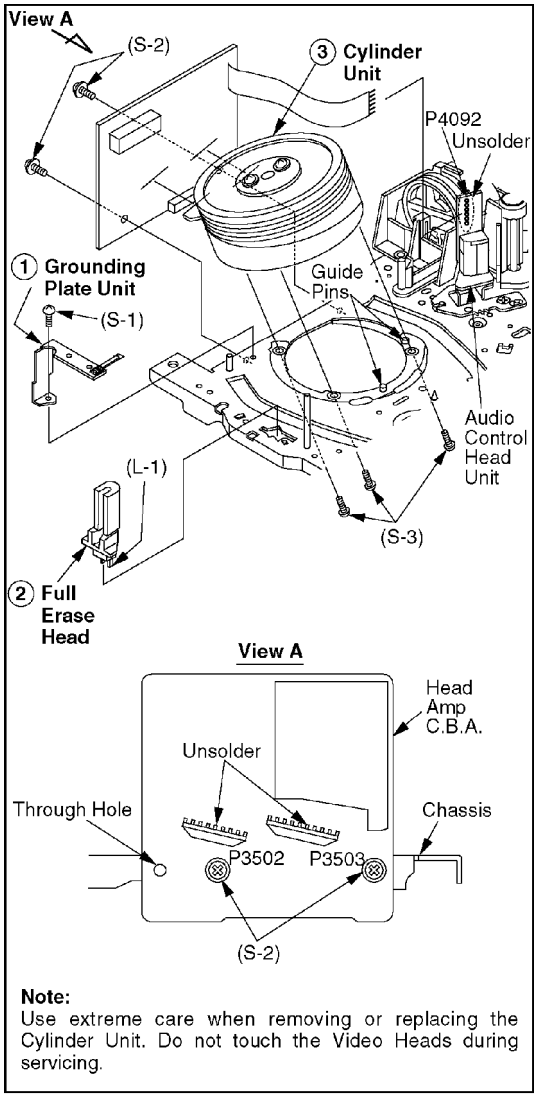
Fig. J1-2

Check the following alignment points to confirm that the Mechanism and Cassette Up Ass'y are in the **EJECT** Position from the top side.


S Loading Arm Unit
T Loading Arm Unit
Chassis hole
Slide
Through Holes
Loading Post Base-S Unit
Loading Post Base-T Unit
Note:
When sliding the Loading Post Base-T Unit as indicated by the arrow, holes on the S & T Loading Arm Unit are Through Holes with hole on chassis. (The hole on T Loading Arm Unit is aligned with the hole on S Loading Arm Unit.)
Through Hole
Main Rod
Line Up
Lift Gear
Intermediate Gear A
Through Hole
Drive Rack Arm
Mechanism and Cassette Up Ass'y
Top View
Drive Rack Unit
Line Up
Wiper Arm Unit

6.2.4. Grounding Plate Unit, Full Erase Head, and Cylinder Unit

Fig. J2-1



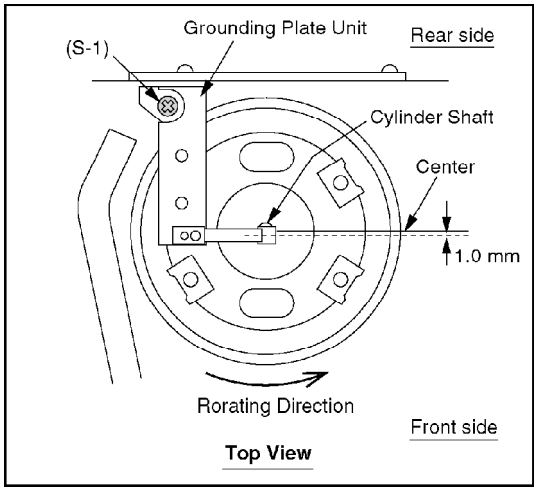
6.2.4.1. Reassembly Notes

1. Adjustment of Grounding Plate Unit

A. After installing, make sure that the Grounding Plate Unit, on the top side of mechanism chassis, is positioned on the front side of the Cylinder shaft so that the center line of the plate is just less than 1.0 mm measured from the centerof the Cylinder shaft. If required, adjust the plate position by loosening Screw (S-1). Never install the Grounding Plate Unit on the rear side of the Cylinder shaft.

Incorrect positioning will cause cylinder buzz.

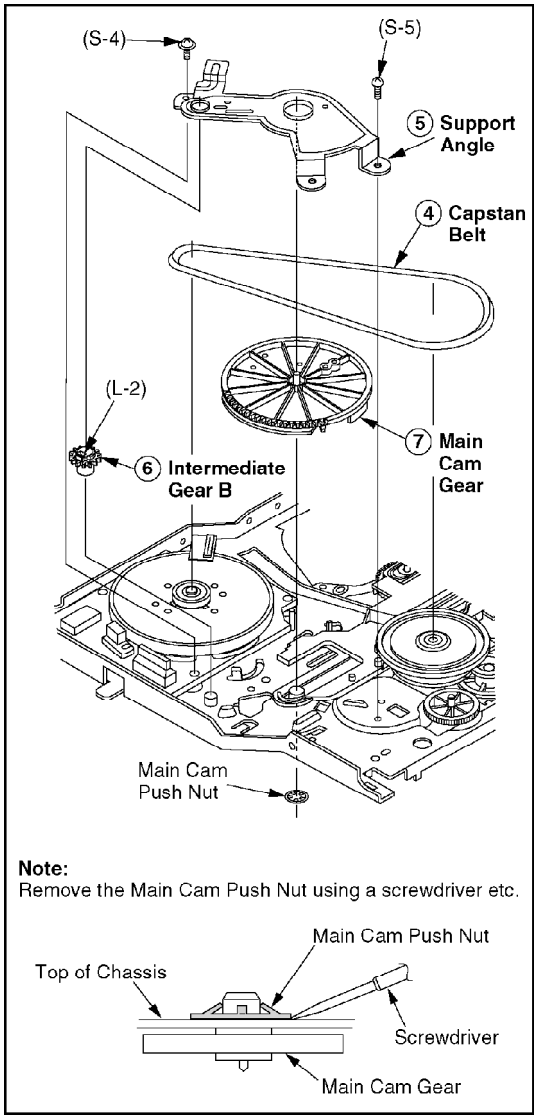
Fig. J2-2



2. After replacing the Cylinder Unit, clear the Total elapsed "Cylinder rotation" time (in hours) to 0. Refer to "USAGE SCREEN MODE" in SERVICE NOTES.

6.2.5. Capstan Belt, Support Angle, Intermediate Gear B, and Main Cam Gear

Fig. J3-1



6.2.5.1. Reassembly Notes

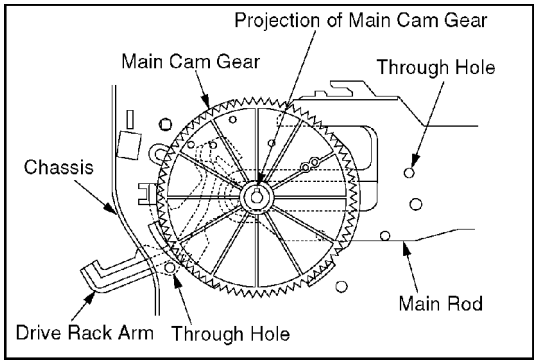
1. Alignment of Main Cam Gear, Drive Rack Arm, and Main Rod

A. Confirm that the hole on Main Rod is a Through Hole with a hole on chassis.

B. Confirm that the hole on Drive Rack Arm is a Through Hole with a hole on chassis.

C. Install the Main Cam Gear so that the projection of Main Cam Gear is in the upward position as shown.

Fig. J3-2

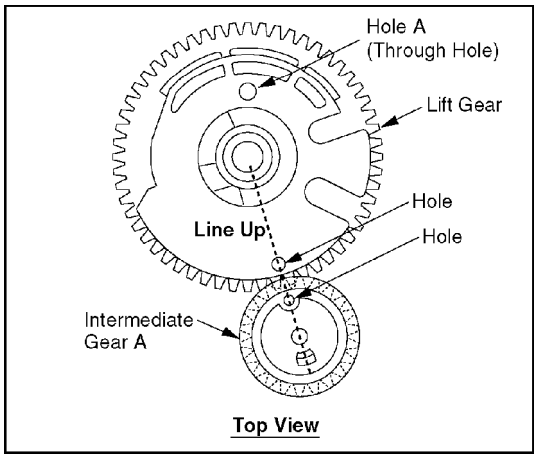


2. Confirmation/Alignment of Intermediate Gear B, Main Cam Gear, and Intermediate Gear A

A. Confirm that the Hole A on Lift Gear is a Through Hole with a hole on chassis.

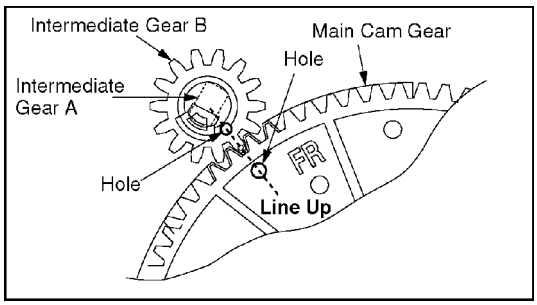
B. Confirm that the hole on Intermediate Gear A is aligned with the hole on Lift Gear.

Fig. J3-3



C. Install the Intermediate Gear B so that the hole on the Intermediate Gear B is aligned with the hole on the Main Cam Gear.

Fig. J3-4

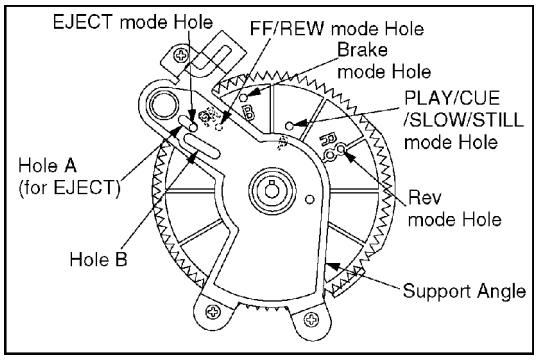


3. Holes on Main Cam Gear

A. The EJECT mode Hole on Main Cam Gear should be a Through

Hole with Hole A on Support Angle in EJECT mode. The each mode Hole on Main Cam Gear should be a Through Hole with Hole B on Support Angle in each mode.

Fig. J3-5



4. Main Cam Gear Kit

A. Main Cam Gear is supplied as a Main Cam Gear Kit only (Kit No. VVGS0009).

Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut.

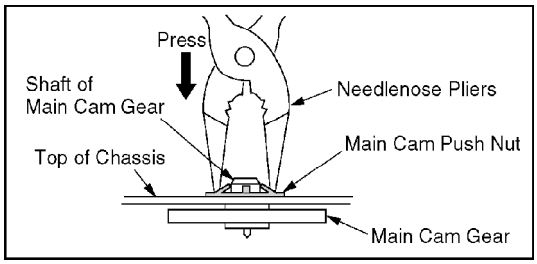
However, Main Cam Push Nut is available separately as a replacement part.

5. Installation of Main Cam Gear and Main Cam Push Nut

A. After installing the Support Angle, install the Main Cam Push Nut with Needlenose Pliers etc. so that it is flush with the chassis.

There may be some slight scratches on the Shaft of Main Cam Gear, when removing the Main Cam Gear. In case that the Main Cam Gear can be installed securely without tottering, it is fine to use the one. If any tottering, install all new parts.

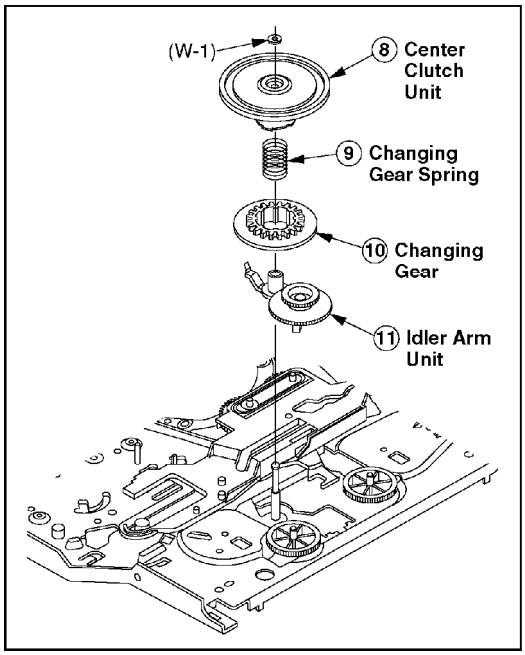
Fig. J3-6



6. The Main Cam Push Nut is not reusable. Install a new one.

6.2.6. Center Clutch Unit, Changing Gear Spring, Changing Gear, and Idler Arm Unit

Fig. J4-1

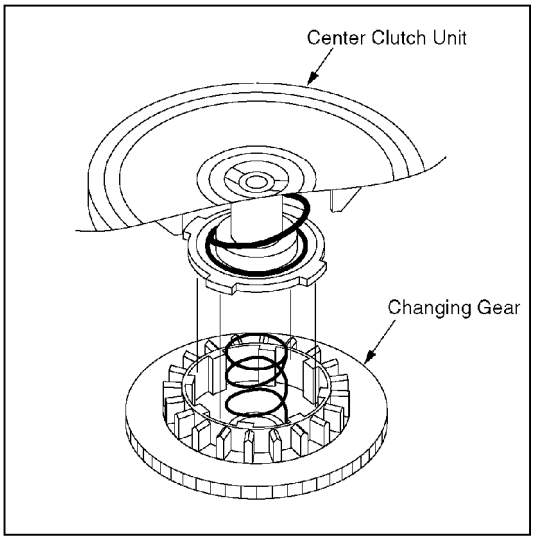


6.2.6.1. Reassembly Notes

1. Installation of Center Clutch Unit

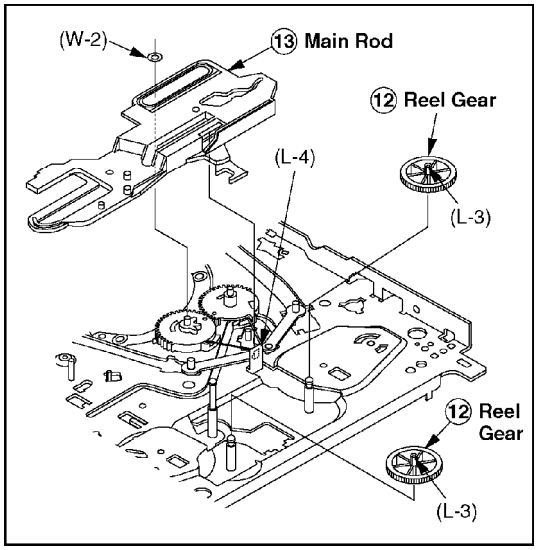
A. Fit the Center Clutch Unit into the Changing Gear.

Fig. J4-2



6.2.7. Reel Gear and Main Rod

Fig. J5-1

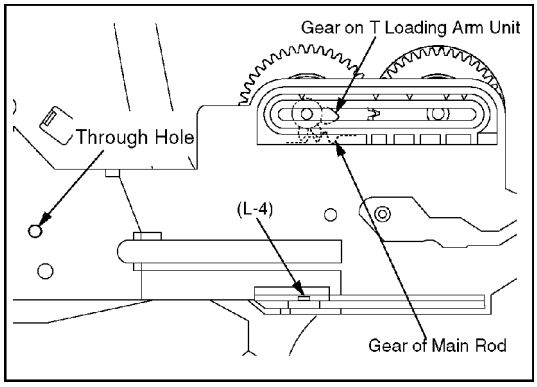


6.2.7.1. Reassembly Notes

1. Alignment of Main Rod and T Loading Arm Unit

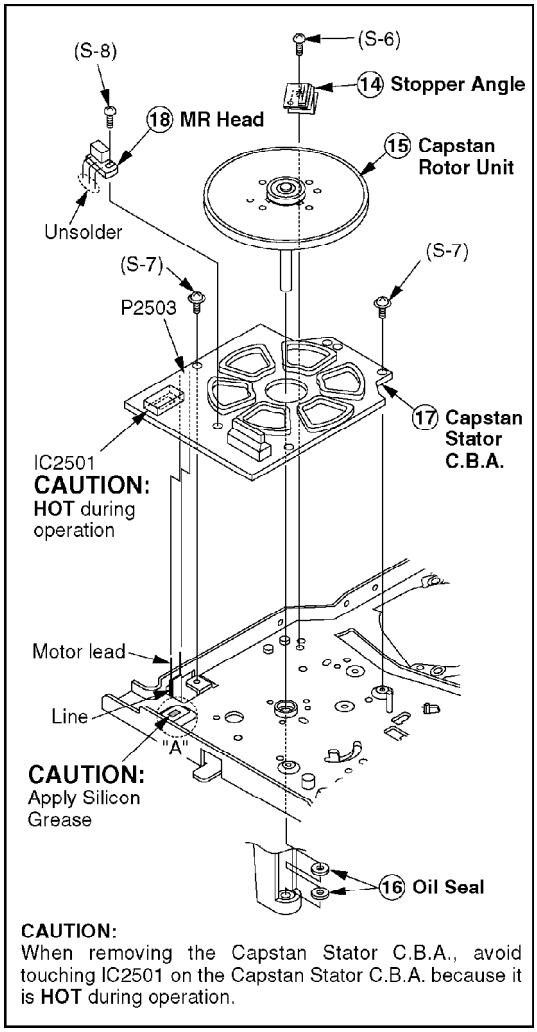
A. Align the Gear of T Loading Arm Unit with Gear of Main Rod. Confirm that the Hole on Main Rod is a Through Hole with a hole on chassis.

Fig. J5-2



6.2.8. Stopper Angle, Capstan Rotor Unit, Oil Seal, Capstan Stator C.B.A., and MR Head

Fig. J6-1



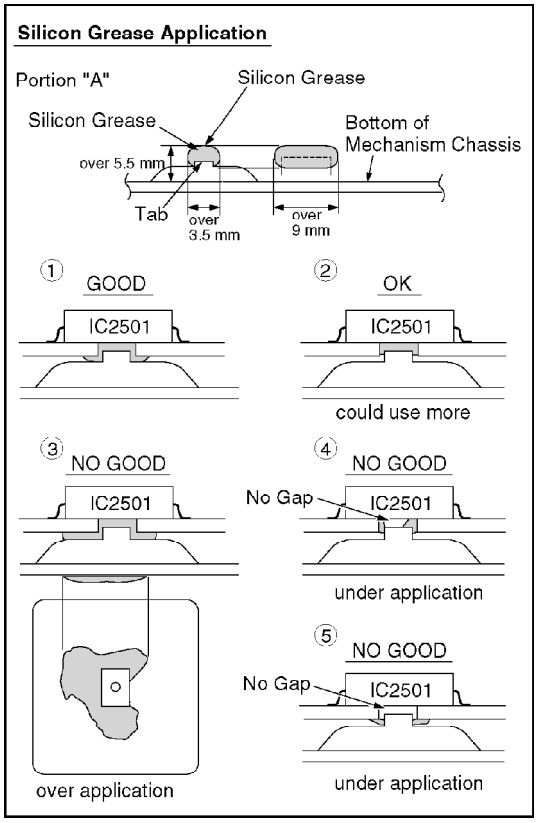
6.2.8.1. Reassembly Notes

1. Application of Silicon Grease

CAUTION:

When installing the IC2501 (AN3846SC) or Capstan Stator C.B.A., be sure to apply Silicon Grease (VFK1301) as shown. Be careful not to touch other parts with greased portion to prevent grease depletion.

Fig. J6-2

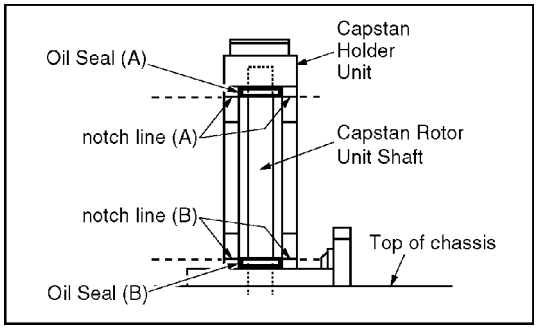


2. Installation of Capstan Rotor Unit and Oil Seal

A. Install the 2 Oil Seals into the Capstan Holder Unit. Then, insert the Capstan Rotor Unit Shaft into the hole of the Capstan Holder Unit so that shaft passes through 2 Oil Seals. Be careful not to scratch the Shaft or Capstan Holder Unit.

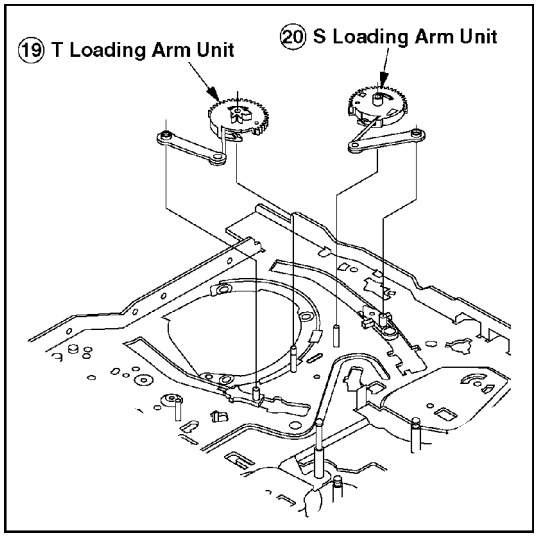
B. Align the bottom of Oil Seal (A) with notch line (A). Align the top of Oil Seal (B) with notch line (B).

Fig. J6-3



6.2.9. T Loading Arm Unit and S Loading Arm Unit

Fig. J7-1



6.2.9.1. Reassembly Notes

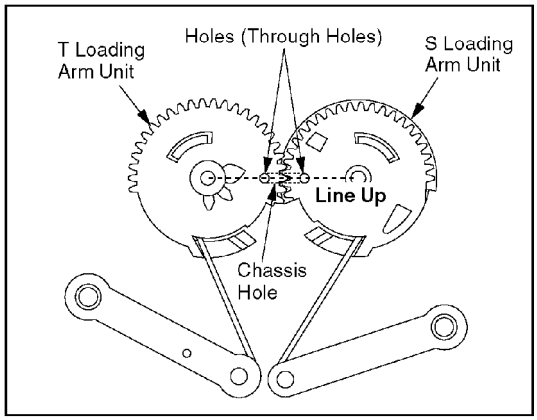
1. Alignment of T Loading Arm Unit and S Loading Arm Unit

A. Install the S Loading Arm Unit onto the chassis.

B. Install the T Loading Arm Unit so that the hole on T Loading Arm Unit is aligned with the hole on S Loading Arm Unit.

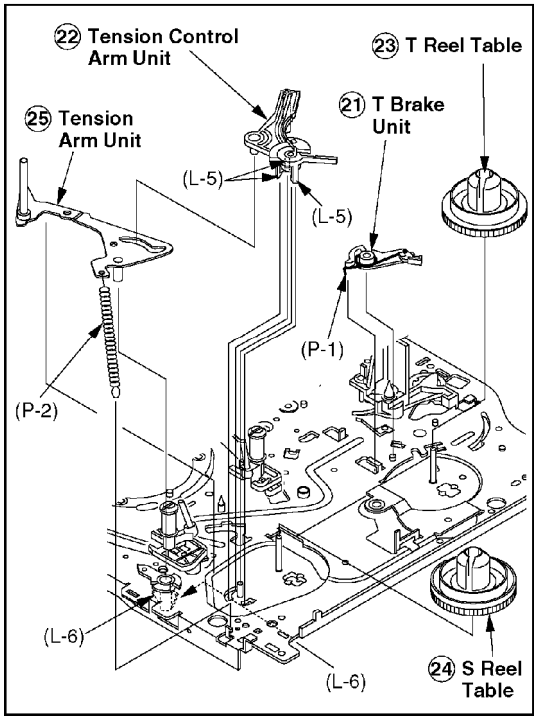
C. Confirm that the holes on the S & T Loading Arm Unit are Through Holes with hole on chassis.

Fig. J7-2



6.2.10. T Brake Unit, Tension Control Arm Unit, T Reel Table, S Reel Table, and Tension Arm Unit

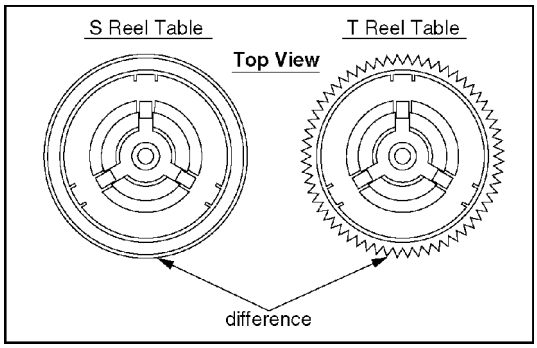
Fig. J8-1



6.2.10.1. Reassembly Notes

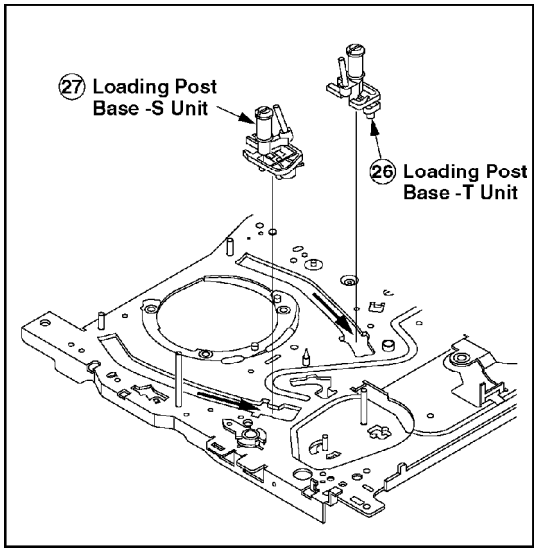
1. How to distinguish between S Reel Table and T Reel Table

Fig. J8-2



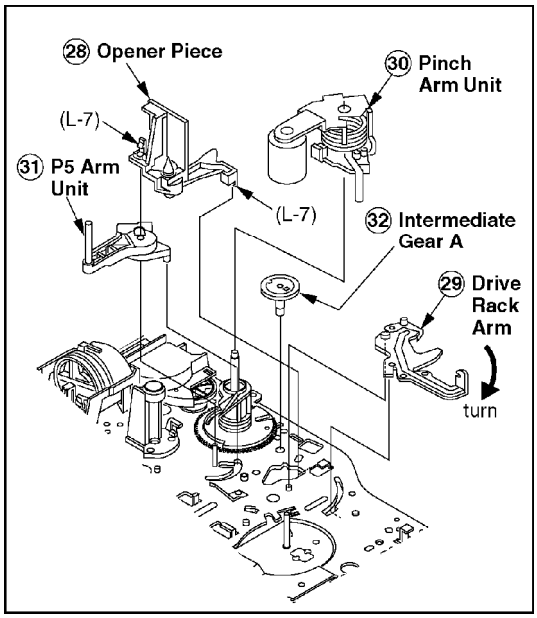
6.2.11. Loading Post Base -T Unit and Loading Post Base -S Unit

Fig. J9



6.2.12. Opener Piece, Drive Rack Arm, Pinch Arm Unit, P5 Arm Unit, and Intermediate Gear A

Fig. J10-1



6.2.12.1. Reassembly Notes

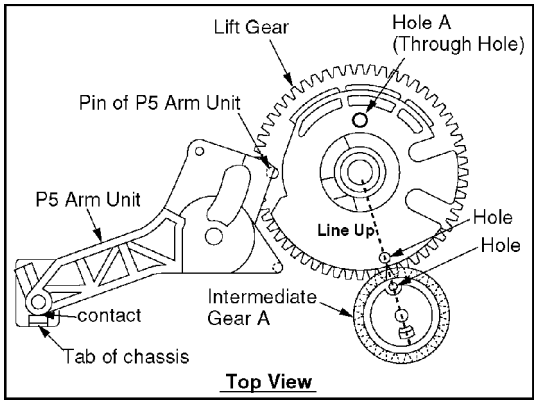
1. Installation/Alignment of Intermediate Gear A, Lift Gear and P5 Arm Unit

A. Rotate the Lift Gear so that Hole A on Lift Gear is a Through Hole with a hole on chassis.

B. Install the Intermediate Gear A so that the hole on Intermediate Gear A is aligned with the hole on Lift Gear.

C. Install the P5 Arm Unit so that it contacts with the tab of chassis.

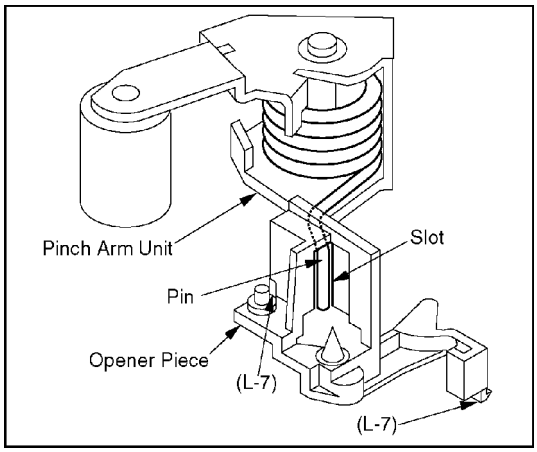
Fig. J10-2



2. Installation of Opener Piece

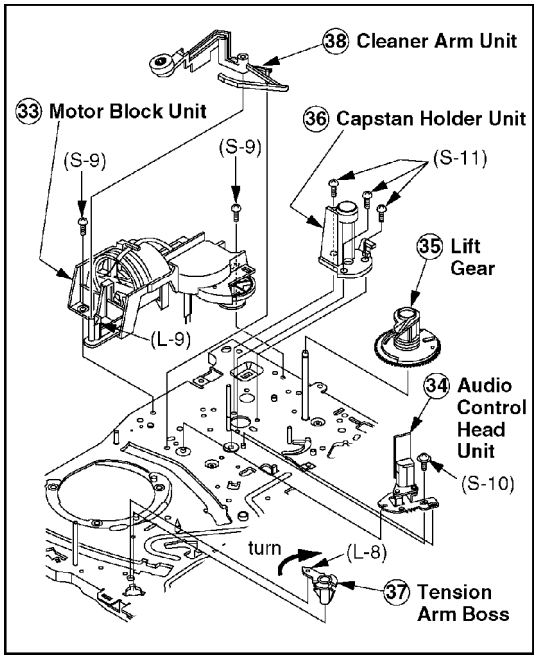
A. Install the Opener Piece so that the slot of the Opener Piece is inserted to the Pin of Pinch Arm Unit

Fig. J10-3



6.2.13. Motor Block Unit, Audio Control Head Unit, Lift Gear, Capstan Holder Unit, Tension Arm Boss, and Cleaner Arm Unit

Fig. J11



6.3. CASSETTE UP ASS'Y SECTION

This chart indicates Step/Location No. of Parts to be serviced and prior steps to gain access items to be serviced when disassembling. When reassembling, perform the step(s) in the reverse order.

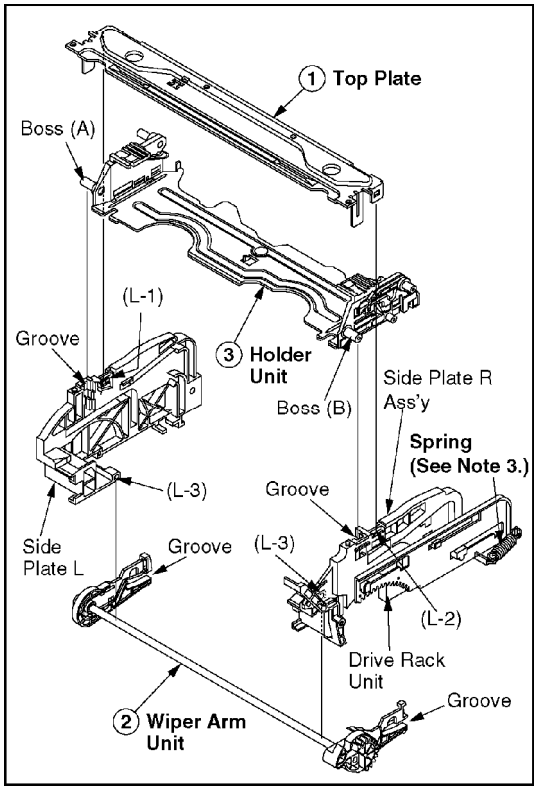
Step/Loc. No.	Prior Step(s)	Part	Fig. No.	Remove	Alignment/Adjustment
①	----------	Top Plate	K1-1	(L-1), (L-2)	
②	1	Wiper Arm Unit	K1-1	2(L-3)	Gear Alignment
③	1,2	Holder Unit	K1-1	-	
④	----------	Opener Lever	K2	2(L-4)	
⑤	1,2,3,4	Drive Rack Unit	K2	-	
↑ A	↑ B	↑ C	↑ D	↑ E	↑ F

How to read chart shown above:

A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
These numbers are also used as the identification (location) No. of parts in Figures.
B: Steps to be completed prior to the current step.
C: Part to be removed or installed.
D: Fig. No. showing Procedure or Part Location.
E: Identification of part to be removed, unhooked, unlocked, released, unplugged or unsoldered.
(S-1) = Screw (S-1), (L-1) = Locking Tab (L-1), (W-1) = Washer (W-1), (P-1) = Spring (P-1), (C-1) = Cut Washer (C-1)
F: Alignment/Adjustment which is required when installing or replacing each Parts.

6.3.1. Top Plate, Wiper Arm Unit, and Holder Unit

Fig. K1-1



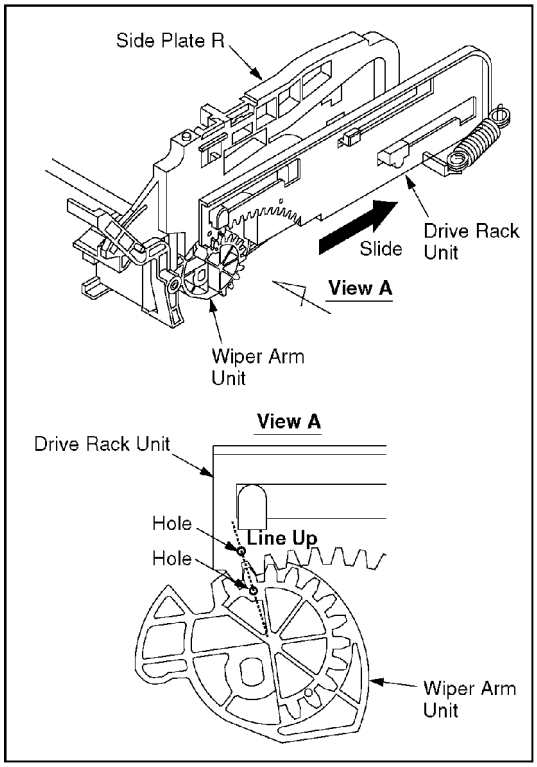
6.3.1.1. Reassembly Notes

1. Alignment of Wiper Arm Unit and Drive Rack Unit

A. Slide the Drive Rack Unit to the far right as indicated by the arrow.

B. Install the Wiper Arm Unit so that the hole on the Wiper Arm Unit is aligned with the hole on the Drive Rack Unit.

Fig. K1-2



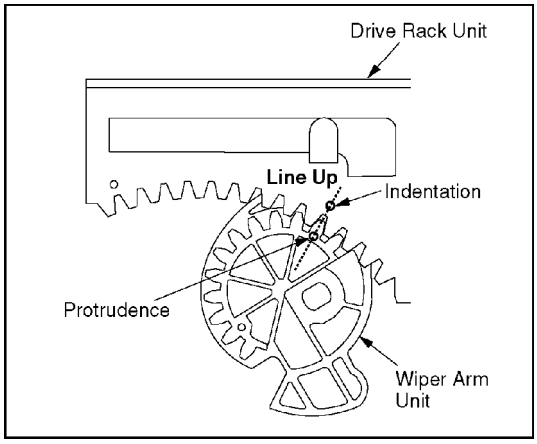
2. Installation of Holder Unit

A. Turn the Wiper Arm Unit so that the grooves on each end are aligned with the each groove on Side Plate L and R.

B. Insert Holder Unit boss (A) and (B) into the grooves as shown in Fig. K1-1.

C. Finally, in the EJECT Position, confirm that the protrudence on the Wiper Arm Unit is aligned with the indentation on the Drive Rack Unit.

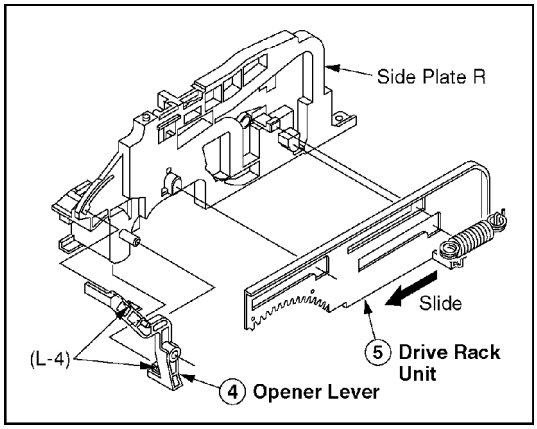
Fig. K1-3



3. Make sure to hook the spring to the Drive Rack Arm of Mechanism chassis.

6.3.2. Opener Lever and Drive Rack Unit

Fig. K2



7. ADJUSTMENT PROCEDURES

7.1. SERVICE FIXTURES AND TOOLS

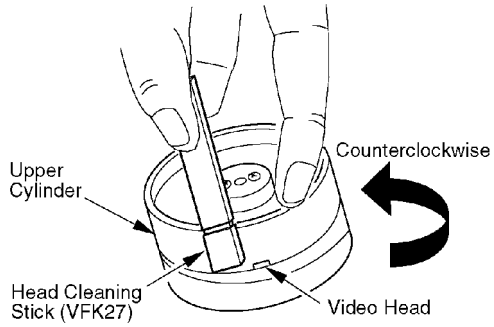
VFMS0003H6 VHS Alignment Tape Video: Color Bar & Monoscope Audio: 6kHz(MONO)	Back Tension Meter (Made in USA., Purchase Locally)	VFK27 Head Cleaning Stick
VFK1301 Silicon Grease	VFKS0081 Grease	VFK0329 Post Adjustment Driver
VFK0330 H-Position Adjustment Driver	TSM10032-2 Permalloy Magnetic Strip	

7.2. MECHANICAL ADJUSTMENT

7.2.1. CLEANING PROCEDURE FOR THE UPPER CYLINDER UNIT

1. While slowly turning the Upper Cylinder Unit counterclockwise by hand, gently rub the Video Heads with a Head Cleaning Stick (VFK27) moistened with Ethanol.
When using a Cleaning Cassette, make sure to use "DRY" type only and be aware that excessive use can shorten head life.

Fig. M1



Note:

1. **Do not rub vertically or apply excess pressure to the Video Heads. Do not turn the Upper Cylinder Unit clockwise while cleaning.**
2. **After cleaning, use a Dry Head Cleaning Stick (VFK27) to remove any Ethanol remaining on the cylinder tape path. Otherwise, tape damage will occur.**

7.2.2. ADJUSTMENT PROCEDURES

7.2.2.1. BACK TENSION CONFIRMATION

Purpose:

To fine adjust the Back Tension so that the tape runs smoothly with a constant tension.

Symptom of Misadjustment:

1) If the tape tension is less than the specified value, the tape cannot come into proper contact with the Video Heads, resulting in poor picture playback.
2) If the tape tension is too high, the tape will soon be damaged.

Equipment Required:

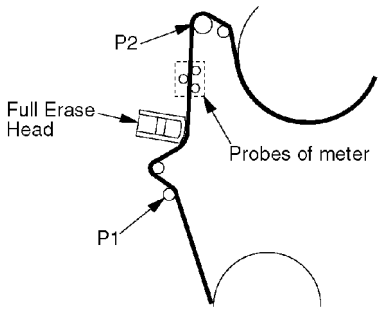
Back Tension Meter (Made in U.S.A., Purchase Locally)
VHS Cassette Tape (120-Minute Tape)

Specification:

20 gf±2.5 gf
(0.196 N±0.025 N)

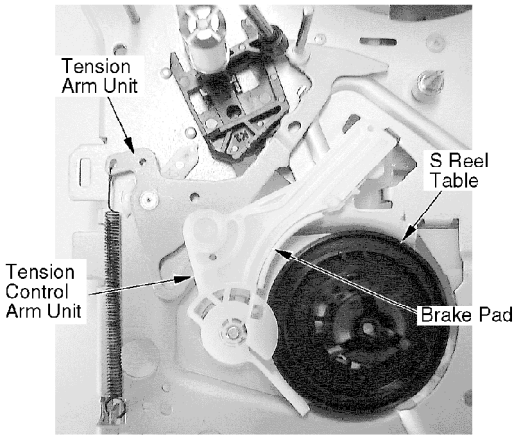
1. **Play back a T120 cassette tape from the beginning for approx. 10 to 20 seconds to stabilize tape movement.**
2. **Insert a Tension Meter into tape path and measure the back tension.**

Fig. M2-1



3. If the reading is out of specification, make sure that there is no dust or foreign material between the Brake Pad of Tension Control Arm Unit and the S Reel Table.
   After cleaning, the reading of tension measurement is still out of specification, replace the Tension Arm Unit and the Tension Control Arm Unit.

Fig. M2-2



Note:

1. Be sure that the three probes of the meter are all in solid contact with the tape, but not touching any other parts of the mechanism.
2. It is recommended that measurements should be repeated at least three (3) times because the tension meter is very sensitive to external vibrations.

7.2.2.2. MR HEAD GAP ADJUSTMENT

Purpose:

To properly pick up the FG Signal.

Symptom of Misadjustment:

If the FG Signal is not properly picked up, Servo Operation cannot

be achieved.

Equipment Required:

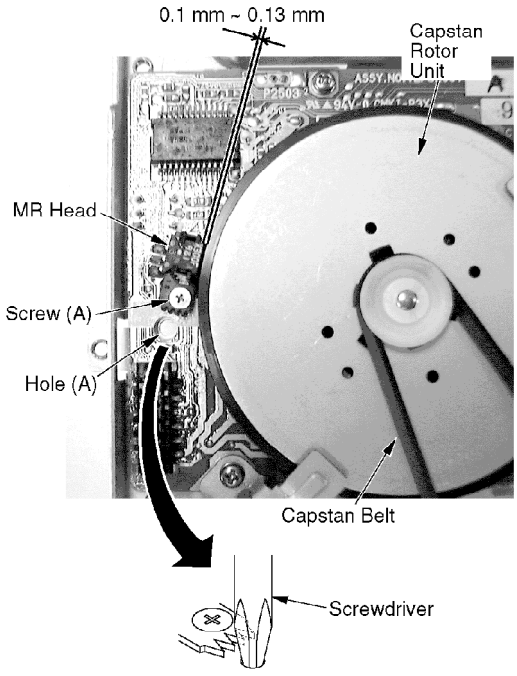
Oscilloscope

Specification:

0.1 mm ~ 0.13 mm

1. Remove the VCR Chassis Unit and then place it upside down.
2. Remove the TV/VCR Main C.B.A.
3. Slightly loosen Screw (A). Then set the Screwdriver (Phillips Driver) into the Hole (A). Turn the screwdriver clockwise until the MR Head touches the rotor. Then turn it slightly counterclockwise to make the clearance as specified.
4. Tighten Screw (A).
5. Reinstall the TV/VCR Main C.B.A.

Fig. M3-1



Note:

Do not touch the outside circumference of the rotor surface with any tool and keep magnetic material away from the rotor magnet (especially metal particles).

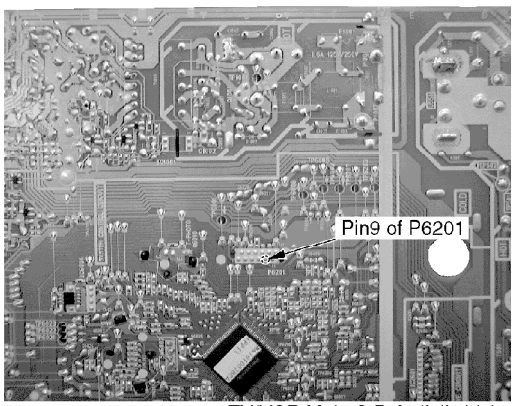
Confirmation of Signal Level

1. Place the unit in Service Position (2). Refer to "SERVICE POSITION

" in SERVICE NOTES.

2. Supply a Video Signal to the video input jack.
3. Insert a cassette tape and place the unit in SLP recording mode.
4. Connect the oscilloscope to Pin 9 of P6201 on the TV/VCR Main C.B.A. Confirm that the signal level is greater than 20 mV [P-P].

Fig. M3-2



TV/VCR Main C.B.A. (foil side)

7.2.2.3. TAPE INTERCHANGEABILITY ADJUSTMENT

Note:

To perform these adjustment/confirmation procedures, set the tracking to the neutral position.

Equipment Required:

Dual Trace Oscilloscope
VHS Alignment Tape (VFMS0003H6)
Post Adjustment Driver (VFK0329)
H-Position Adjustment Driver (VFK0330)

7.2.2.3.1. ENVELOPE OUTPUT ADJUSTMENT

The height of the P2 and P3 Posts replacement part is preadjust at the factory.

Purpose:

To achieve a satisfactory picture and secure precise tracking.

Symptom of Misadjustment:

If the envelope is output poorly, much noise will appear in the picture. Then the tracking will lose precision and the playback picture will be distorted by any slight variation of the tracking control circuit.

Equipment Required:

Post Adjustment Driver (VFK0329)

1. **Place a jumper between TP6003 and +5V(TP6009) on the TV/VCR Main C.B.A. to defeat Auto Tracking.**
2. **Eject the tape and insert it again to access the Neutral Tracking position.**
3. **Play back the alignment tape.**
4. **Connect the oscilloscope to TP3002 on the Video Signal Process Section of the TV/VCR Main C.B.A. Use TP6205 as a trigger.**
5. **Confirm that the RF envelope is flat enough (V1/V-max. is 0.7 or more). If not, with Post Adjustment Driver, adjust P2 and P3 post height so that the envelope waveform becomes as flat (V1/V-max. is 0.7 or more) as possible (Noenvelope drop). If the envelope drop appears on the left-half of the waveform, adjust P2 post height. If the envelope drop appears on the right-half of the waveform, adjust P3 post height.**

CAUTION:

Overtightening P2 and P3 posts may cause the threads to strip.

Note:

It will be possible to confirm Step 5 according to following steps.

1. **Press the Tracking Control Up or Down button on remote control. Make sure that the envelope waveform remains flat. If not, readjust P2 and/or P3 post heights.**

Fig. M4-1

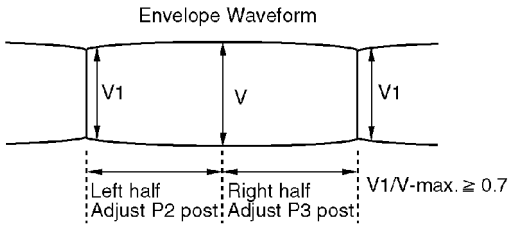
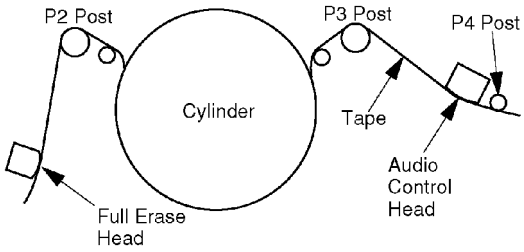
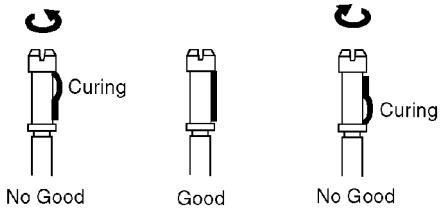


Fig. M4-2



6. After adjustment, confirm that the tape travels without curling at P2 and P3 posts.

Fig. M4-3



7. Remove the jumper after completing the adjustment procedure.

7.2.2.3.2. AUDIO CONTROL HEAD TILT ADJUSTMENT

Purpose:

To confirm that the tape runs smoothly. In particular, confirm that the tape properly picks up the Audio Signal at the upper part of the head and the Control Signal at the lower part of the head.

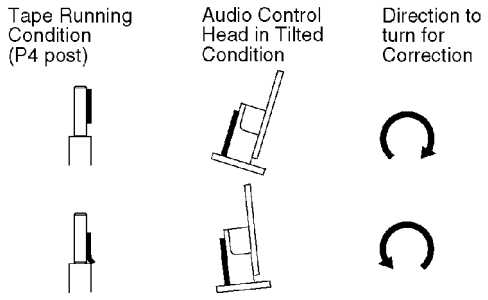
Symptom of Misadjustment:

If the tilt of the Audio Control Head is poorly adjusted, the tape will eventually be damaged. An intermittent Blue screen may be seen in Playback.

1. Play back a T120 cassette tape and check that the tape travels smoothly between the upper and lower guides of the P4 post.

2. If necessary, adjust Black Screw (B) clockwise until the tape begins to curl at the lower edge of the P4 post. Then adjust the screw counterclockwise until the curling is eliminated.

Fig. M5



7.2.2.3.3. AUDIO CONTROL HEAD HEIGHT ADJUSTMENT

The height of the Audio Control Head replacement part is preset at the factory.

Purpose:

To be sure the tape runs properly along the Control Head.

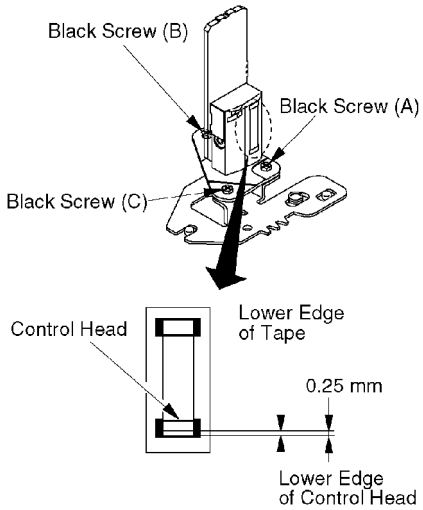
Symptom of Misadjustment:

If the control signal is not properly picked up, Servo Operation cannot be achieved. A Blue screen will be seen in Playback.

This confirmation is required when the Audio Control Head is replaced.

1. **Play back a T120 cassette tape and check that the lower edge of the tape runs approximately 0.25 mm above the lower edge of the Audio Control Head.**
2. **If necessary, adjust Black Screws (A) and (B) clockwise to lower the tape or counterclockwise to raise.**

Fig. M6



7.2.2.3.4. AUDIO CONTROL HEAD AZIMUTH ADJUSTMENT

Purpose:

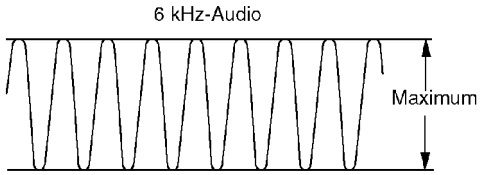
To adjust the position and height of the Audio Control Head so that it meets the tape tracks properly.

Symptom of Misadjustment:

If the position of the Audio Control Head is not properly adjusted, the Audio S/N Ratio is poor.

1. **Connect the oscilloscope to the TP4002 on the TV/VCR Main C.B.A.**
2. **Play back the 6 kHz Monaural Audio portion of the alignment tape.**
3. **Adjust Black Screw (C) on the Audio Control Head base so that the output level is at maximum.**

Fig. M7



4. Confirm the height of the Audio Control Head is proper. If not, readjust Black Screws (A) and (B).

7.2.2.3.5. AUDIO CONTROL HEAD HORIZONTAL POSITION ADJUSTMENT

Purpose:

To adjust the Horizontal Position of the Audio Control Head.

Symptom of Misadjustment:

If the Horizontal Position of the Audio Control Head is not properly adjusted, a maximum envelope cannot be obtained at the Neutral Position of the Tracking Control Circuit.

1. Place a jumper between TP6003 and +5V(TP6009) on the TV/VCR Main C.B.A. to defeat Auto Tracking.

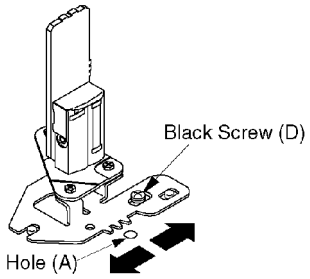
2. Eject the tape and insert it again to access the Neutral Tracking position.

3. Play back the alignment tape.

4. Connect the oscilloscope to TP3002 on the Video Signal Process Section of the TV/VCR Main C.B.A. Use TP6205 as a trigger.

5. Loosen the Black Screw (D) and tighten it slightly. Set the H-Position Adjustment Driver into the Hole (A). Then slowly turn the fixture either clockwise or counterclockwise so that the envelope is at maximum.

Fig. M8



6. Tighten Black Screw (D).

7. Remove the jumper between TP6003 and +5V(TP6009).

Note:

Old type of H-Position Adjustment Driver (VFK0136) can be used for this adjustment.

7.3. ELECTRICAL ADJUSTMENT

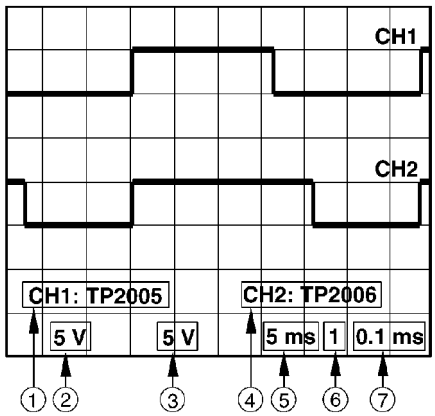
7.3.1. TEST EQUIPMENT

To do all of these electrical adjustments, the following equipment is required.

1. Dual-Trace Oscilloscope
   Voltage Range: 0.001 V to 50 V/Div.
   Frequency Range: DC to 50 MHz
   Probes: 10:1, 1:1
2. NTSC Video Pattern Generator
3. DVM (Digital Volt Meter)
4. MTS/SAP Signal Generator
   (TV Multi-Channel Sound Modulator (U.S.A.))
5. Frequency Counter
   Frequency Range: 0 to 150 MHz
6. Plastic Tip Driver and Non-Metal Driver
7. Isolation Transformer (Variable)
8. VHS Alignment Tape (VFMS0003H6)
9. Degaussing Coil
10. White Pattern Generator
11. Audio Generator

7.3.2. HOW TO READ THE ADJUSTMENT PROCEDURES

Fig.E1



1. Connecting Point
2. Volts/DIV
3. Volts/DIV
4. Connecting Point
5. Time/DIV
6. Trigger Channel of the Scope
   1 : CH1
   2 : CH2
7. Time/DIV for Delay

7.3.3. EVR (Electronic Variable Register) ADJUSTMENT WITH THE REMOTE CONTROL

This unit has electronic technology using I2C Bus concept.The following control functions are adjusted by using "On Screen Displays" and the remote control instead of adjusting mechanical controls (VR).

Control functions	※2 Address	Range	Default
SUB COLOR	00	C0 - FF, 00 - 3F	00
SUB TINT	01	E0 - FF, 00 - 1F	00
SUB BRIGHT	02	C0 - FF, 00 - 3F	F0
CONTRAST	03	C1 - FF, 00	00
SUB SHARPNESS	04	E0 - FF, 00 - 1F	00
R CUT -OFF	05	00 - 7F	1E
G CUT -OFF	06	00 - FD	3C
B CUT -OFF	07	00 - FD	3C
G DRIVE	08	00 - 7F	40
B DRIVE	09	00 - 7F	40
SUB CONTRAST	0A	00 - 0F	06
H CENTER	0B	00 - 0F	08
SUB V	0C	00 - 03	00
V SIZE	0D	00 - 7F	40
V POSITION ※3	0E	00 - 7F	40
ANR CTL	10	00 - EF	89
PICTURE CTL	11	00 - EF	86
VV COLOR ※1	12	C0 - FF, 00 - 3F	00
VV TINT ※1	13	E0 - FF, 00 - 1F	00
VV SHARPNESS	14	E0 - FF, 00 - 1F	F8
PG SHIFTER	15	01 - FD	80
FM ANT	18	00 - 01	00

Bold-faced letters → Control functions which need to be adjusted.

Note:

※1 After "SUB COLOR/SUB TINT ADJUSTMENT" is complete, perform as follows.
- Write the same value of SUB COLOR (Address 00) to VV COLOR (Address 12).
- Write the same value of SUB TINT (Address 01) to VV TINT (Address 13) .

※2 Address is not displayed on the TV screen. Other Addresses except above are not used.

※3 For Model with 20 inch CRT, V POSITION are not required in EVR adjustment.

7.3.3.1. EVR ADJUSTMENT ITEM

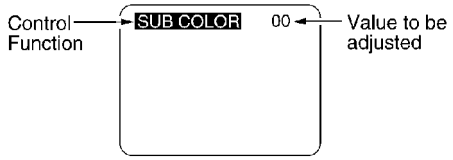
The following Items need to be adjusted for EVR adjustment.

- PG SHIFTER ADJUSTMENT
- SUB CONTRAST ADJUSTMENT
- CUT OFF, DRIVE ADJUSTMENT
- SUB COLOR/SUB TINT ADJUSTMENT
- V. HEIGHT/H. POSITION ADJUSTMENT
- WHITE BALANCE ADJUSTMENT
- SUB BRIGHTNESS ADJUSTMENT

7.3.3.2. How to enter EVR adjustment mode

Press and hold STOP, PLAY, and VOL DOWN buttons on the unit together over 5 seconds with no cassette inserted.
The adjustment overlay will appear.

Fig.E2-1



7.3.3.2.1. How to adjust:

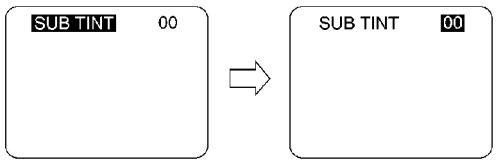
1. **Press CH UP/DOWN key on the remote control to select control function to be adjusted.**

   Important Note:

   Make a note of the original value of the controls before modifying in case the wrong control is adjusted.

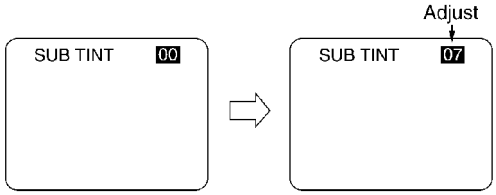
2. **Press VOL UP/DOWN key on the remote control so that the shaded area moves to the value.**

Fig.E2-2



3. **Press CH UP/DOWN key on the remote control to adjust the value of the selected control.**

Fig.E2-3



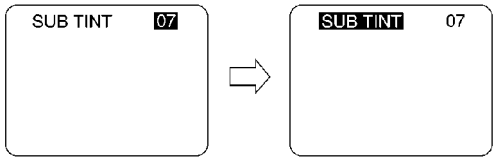
Note:

You can select a desired channel by using the numbered keys on

the remote control in EVR adjustment mode.

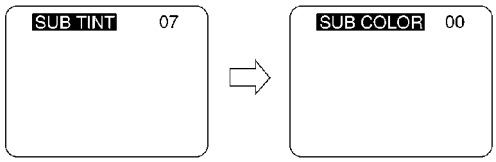
4. Press VOL UP/DOWN key on the remote control so that the shaded area moves to the control function.

Fig.E2-4



5. Press CH UP/DOWN key on the remote control to select a control function for the next adjustment if necessary.

Fig.E2-5



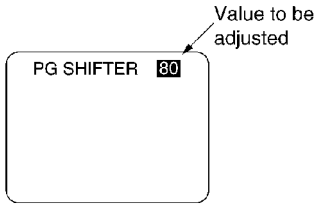
7.3.3.2.2. How to release from EVR Adjustment Mode:
Press and hold STOP, PLAY, and VOL DOWN buttons on the unit together over 5 seconds again or press the POWER button OFF. The adjusted value will be written to Memory IC (IC6004).

7.3.3.3. HOW TO ENTER EVR PG SHIFTER ADJUSTMENT MODE

1. Enter EVR adjustment mode.

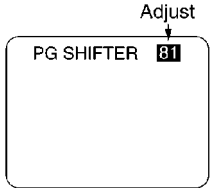
2. Insert the VHS Alignment Tape and playback in SP mode. The adjustment overlay will appear.

Fig.E2-6



7.3.3.3.1. How to adjust:
Press CH UP/DOWN key on the remote control to adjust the value.

Fig.E2-7



7.3.3.3.2. How to release from EVR PG Shifter Adjustment Mode:
Press STOP button or press the POWER button OFF.
The adjusted value will be written to Memory IC (IC6004).

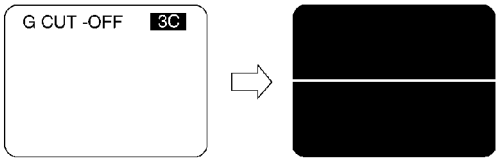
7.3.3.4. HOW TO ENTER SERVICE MODE

1. Enter EVR adjustment mode.
2. Press DISPLAY key on the remote control for collapse scan.

   Note:

   Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value for adjustments you will proceed.

Fig.E2-8



7.3.3.4.1. How to release from Service Mode:
Press DISPLAY key again on the remote control.

7.3.4. PG SHIFTER ADJUSTMENT

Purpose:

Determine the Video Head Switching Point during Playback.

Symptom of Misadjustment:

May cause Head Switching Noise and/or Vertical Jitter.

Test Point :

TP3001 (TV/VCR Main C.B.A.),
TP6205 (TV/VCR Main C.B.A.)

Adjustment :

PG SHIFTER (EVR)

Specification :

T = 6 H±1 H (0.38 ms±0.06 ms)

INPUT :

Mode :

SP Playback

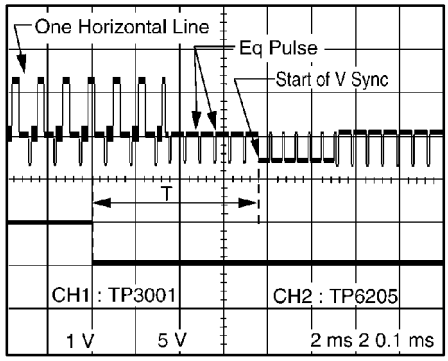
Equipment :

Oscilloscope,
VHS Alignment Tape (VFMS0003H6)

1. Enter EVR PG Shifter Adjustment mode, refer to "HOW TO ENTER EVR PG SHIFTER ADJUSTMENT MODE."

2. Connect the channel-1 scope probe to TP3001 and the channel-2 scope probe to TP6205. Used TP6205 as a trigger.
3. Adjust value so that the trailing edge of the head switching pulse is placed 6 H±1 H (0.38 ms±0.06 ms) before the start of the vertical sync pulse.
4. Release EVR PG Shifter Adjustment Mode.
   The adjusted value will be written to Memory IC (IC6004).

Fig.E3



7.3.5. SUB CONTRAST ADJUSTMENT

Purpose:

To set the optimum sub contrast level.

Symptom of Misadjustment:

The picture is too dark or too light.

Test Point :

Pin 5 of P6001 (TV/VCR Main C.B.A.) or TP49 (CRT C.B.A.)

Adjustment :

SUB CONTRAST (EVR)

Specification :

3.0 V[p-p]±0.1 V[p-p]

INPUT :

Video Input Jack,
Crosshatch Pattern Signal 1 V[p-p]
(75 Ω terminated)

Mode :

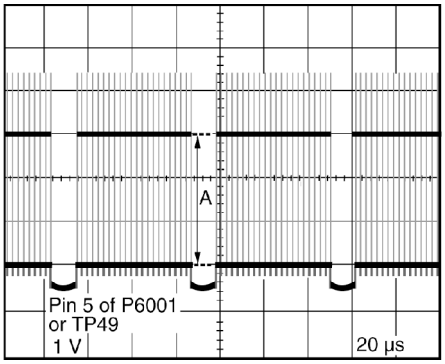
STOP

Equipment :

Oscilloscope,
NTSC Video Pattern Generator

1. **Supply a Crosshatch Pattern Signal to the Video Input Jack.**
2. **Connect the Oscilloscope to Pin 5 of P6001 on the TV/VCR Main C.B.A. or TP49 on the CRT C.B.A.**
3. **Select SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the (D0).**
4. **Select SUB CONTRAST in EVR adjustment mode and adjust so that the level A is 3.0 V[p-p]±0.1 V[p-p].**
5. **Select SUB BRIGHT in EVR adjustment mode and reset to the original value.**

Fig.E4



7.3.6. FOCUS, SCREEN, CUT OFF, DRIVE ADJUSTMENT

Purpose:

To set the optimum Focus and Screen.

Symptom of Misadjustment:

The picture is out of Focus and there will be an improper screen color mix.

Test Point :

TP50 (CRT C.B.A.)

Adjustment :

FOCUS CONTROL (Flyback Transformer),
SCREEN CONTROL (Flyback Transformer),
SUB BRIGHT (EVR),
B DRIVE (EVR),

R DRIVE (EVR),
B CUT -OFF (EVR),
G CUT -OFF (EVR),
R CUT -OFF (EVR)

Specification :

Refer to descriptions below.

INPUT :

Video Input Jack,
Monoscope Pattern Signal

Mode :

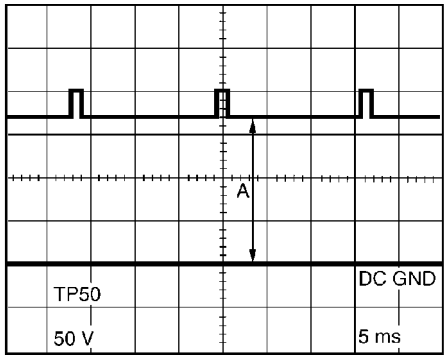
STOP

Equipment :

Oscilloscope,
NTSC Video Pattern Generator

1. **Supply a Monoscope Pattern Signal to the Video Input Jack.**
2. **Connect the Oscilloscope to TP50 on the CRT C.B.A. (Use TP47 for GND.)**
3. **Select SUB BRIGHT and move the shaded area to the value in EVR adjustment mode.**
4. **Adjust the FOCUS CONTROL on the Flyback Transformer so that the center of picture is the sharpest.**
5. **Turn the SCREEN CONTROL on the Flyback Transformer fully counterclockwise.**
6. **Press DISPLAY key (Service Switch) on the remote control for collapse scan. (Refer to HOW TO ENTER SERVICE MODE.)**
7. **Adjust SUB BRIGHT in EVR adjustment mode so that the level A is (140 VDC±5 VDC: For model with 13 inch CRT) or (170 VDC±5 VDC: For model with 20 inch CRT).**

Fig.E5



8. Turn the SCREEN CONTROL on the Flyback Transformer clockwise carefully and stop at the point where any color is first observed.
9. In EVR adjustment mode, select the two colors not observed in step 8 from the following control functions (B CUT -OFF, G CUT -OFF, or R CUT -OFF) and adjust so that the horizontal line becomes white.
   For example, if the horizontal line appeared red in step 8, select and adjust the B CUT -OFF and G CUT -OFF.
10. Press DISPLAY key on the remote control again to return for full frame scan.
11. Select SUB BRIGHT in EVR adjustment mode and adjust so that the picture has adequate brightness.
12. Select G DRIVE and B DRIVE in EVR adjustment mode and adjust so that the entire screen is white.

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value.

7.3.7. SUB COLOR/SUB TINT ADJUSTMENT

Purpose:

To set the standard color phase.

Symptom of Misadjustment:

Color phase will be shifted.

Test Point :

Pin 5 of P6001 (TV/VCR Main C.B.A.) or TP49 (CRT C.B.A.)

Adjustment :

SUB COLOR (EVR), SUB TINT (EVR)

Specification :

C = 1.40 V[p-p]±0.15 V[p-p]
(For model with 13 inch CRT)
C = 1.50 V[p-p]±0.15 V[p-p]
(For model with 20 inch CRT)

INPUT :

Video Input Jack,
Rainbow Color Bar

Mode :

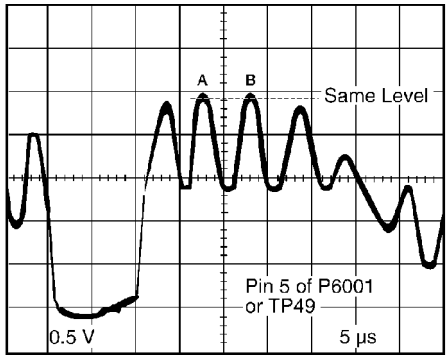
STOP

Equipment :

Oscilloscope,
NTSC Video Pattern Generator

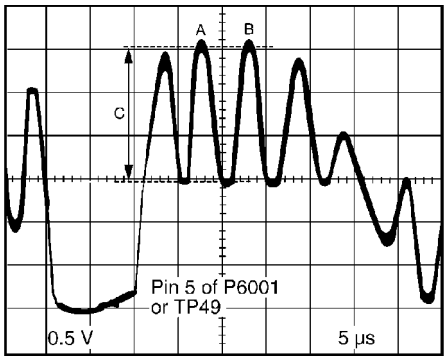
1. **Supply the Rainbow Color Bar signal to Video Input Jack.**
2. **Select SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the minimum (C0).**
3. **Connect the Oscilloscope to Pin 5 of P6001 on the TV/VCR Main C.B.A. or TP49 on the CRT C.B.A.**
4. **Select SUB TINT in EVR adjustment mode and adjust so that level A and B should be equal in amplitude.**

Fig.E6-1



5. **Select SUB COLOR in EVR adjustment mode and adjust so that the level C is (1.40 V[p-p]±0.15 V[p-p]: For model with 13 inch CRT) or (1.50 V[p-p]±0.15 V[p-p]: For model with 20 inch CRT).**

Fig.E6-2



6. Select SUB BRIGHT in EVR adjustment mode and reset to the original value.

Note:
After "SUB COLOR/SUB TINT ADJUSTMENT" is complete, perform as follows.

- Write the same value of SUB COLOR (Address 00) to VV COLOR (Address 12).
- Write the same value of SUB TINT (Address 01) to VV TINT (Address 13).

7.3.8. PURITY ADJUSTMENT

Purpose:

To set the uniform white over the whole screen.

Symptom of Misadjustment:

The white screen will vary from area to area.

Test Point :

Adjustment :

Pair of 4-Pole Convergence Magnet Rings,
Pair of 6-Pole Convergence Magnet Rings,
Pair of Purity Magnet Rings,
Deflection Yoke (CRT Unit),
G CUT -OFF (EVR)

Specification :

Refer to descriptions below.

INPUT :

Video Input Jack,
Crosshatch Pattern Signal,
White Pattern Signal

Mode :
STOP

Equipment :
Degaussing Coil,
NTSC Video Pattern Generator,
White Pattern Generator

1. **Remove the wedges from the CRT.**
2. **Slide the Deflection Yoke forward to the end of the CRT neck. (For model with 13 inch CRT)**
   Set the Convergence Yoke as specified.
3. **Power the unit "ON" and degauss the CRT by the Degaussing Coil.**
4. **Supply the Crosshatch Pattern Signal to Video Input Jack.**
5. **Turn the pair of 4-Pole Convergence Magnet Rings so that B and R at the center of CRT overlap each other.**
6. **Turn the pair of 6-Pole Convergence Magnet Rings so that B and R which overlapped each other in Step 5 overlap G.**
7. **Supply a White Pattern Signal to Video Input Jack.**
8. **Select G CUT -OFF in EVR adjustment mode and adjust it to become to the minimum level. Turn the Pair of Purity Magnet Rings so that the distorted color areas are approximately across from each other.**
   Slide the Deflection Yoke back slightly (without rotating it) until the distorted color areas disappear from the screen.
9. **Supply a Crosshatch Pattern Signal to Video Input Jack again. Confirm that the Center Bar is at the horizontal center line of the CRT and the V-Center Bar is at the vertical center line of the CRT. Then, tighten the Expansion Screw.**
10. **Press DISPLAY key (Service Switch) on the remote control for collapse scan. (Refer to How to Enter Service Mode.)**
11. **Press DISPLAY key on the remote control again to return for full frame scan. Make sure that the entire screen is white. If not, adjust G DRIVE and B DRIVE in EVR adjustment mode.**

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value.

Fig.E7-1

(For model with 13 inch CRT)

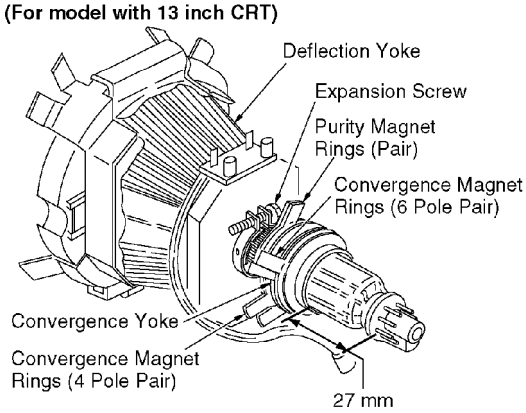
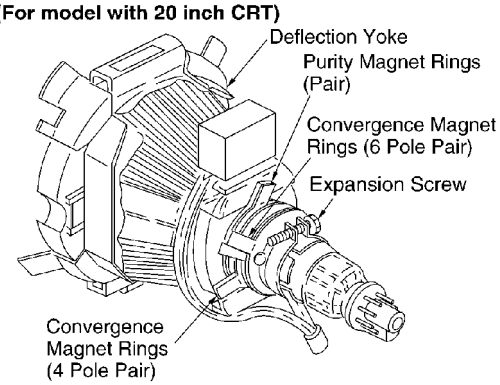


Fig.E7-2

(For model with 20 inch CRT)


Deflection Yoke
Purity Magnet Rings (Pair)
Convergence Magnet Rings (6 Pole Pair)
Expansion Screw
Convergence Magnet Rings (4 Pole Pair)

7.3.9. STATIC CENTRAL CONVERGENCE ADJUSTMENT

Purpose:

To set the uniform convergence over the whole screen.

Symptom of Misadjustment:

The convergence on the screen will vary from the center portion to the surrounding edges.

Test Point :

Adjustment :

Pair of 4-Pole Convergence Magnet Rings,
Pair of 6-Pole Convergence Magnet Rings

Specification :

Refer to descriptions below.

INPUT :

Video Input Jack,
Crosshatch Pattern Signal,

Mode :

STOP

Equipment :

NTSC Video Pattern Generator

1. **Supply a Crosshatch Pattern Signal to the Video Input Jack.**
2. **Turn the Pair of 4 - Pole Convergence Magnet Rings so that B and R, at center of CRT, overlap each other.**
3. **Turn the Pair of 6 - Pole Convergence Magnet Rings so that B and R, that overlapped each other in step 2 overlaps G.**

7.3.10. DYNAMIC CONVERGENCE ADJUSTMENT

Purpose:

To set the uniform convergence over the whole screen.

Symptom of Misadjustment:

The convergence on the screen will vary at the sides of the CRT.

Test Point :

Adjustment :

Deflection Yoke (CRT Unit)

Specification :

Refer to descriptions below.

INPUT :

Video Input Jack,
Crosshatch Pattern Signal,
White Pattern Signal

Mode :

STOP

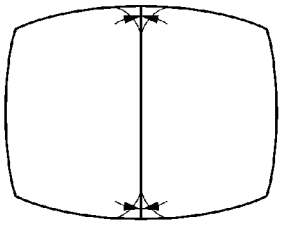
Equipment :

NTSC Video Pattern Generator

White Pattern Generator

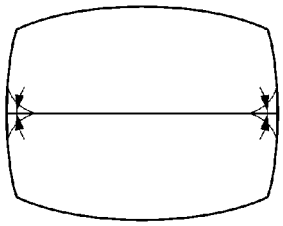
1. **Supply a Crosshatch Pattern Signal to the Video Input Jack.**
2. **Hold the Deflection Yoke and wiggle it up and down to produce the correct Crosshatch Pattern position.**

Fig.E8-1



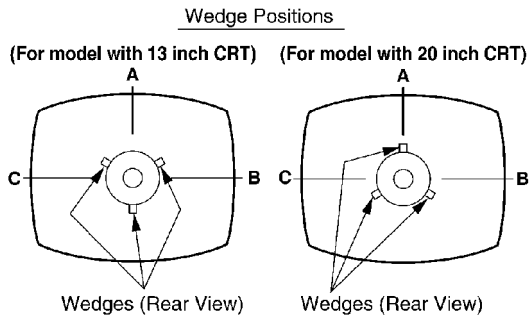
3. **Hold Deflection Yoke and wiggle it horizontally (right to left) to produce the correct Crosshatch Pattern position.**

Fig.E8-2



4. **Insert three wedges to maintain the correct Crosshatch Pattern Position.**

Fig.E8-3

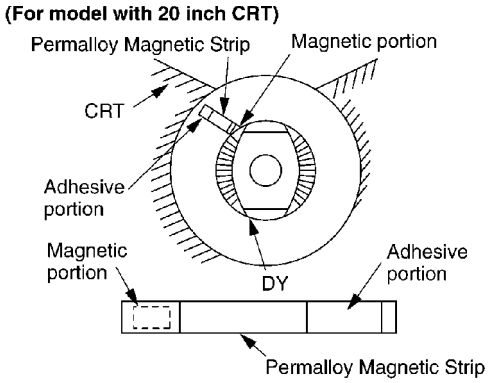


(Confirmation of white)

1. **Supply a White Pattern Signal to the Video Input Jack.**
2. **Confirm that the purity is still correct.**
3. **If the purity is not acceptable, readjust the purity.**
4. **(For model with 20 inch CRT)**
   If the convergence error is more than 1.5 mm (0.06 inch) from the green dot at each corner, adjust the convergence at that corner

with a Permalloy Magnetic Strip. Insert a permalloy strip into the gap between the Deflection Yoke and the CRT alonga diagonal line of the CRT bell. Adjust it for the best possible convergence. Use one Permalloy Magnetic Strip in each corner if necessary.
Permalloy Magnetic Strip Part Number (TSM10032-2).

Fig.E8-4



7.3.11. V. HEIGHT/H. POSITION ADJUSTMENT

Purpose:

To set the standard vertical and horizontal picture size.

Symptom of Misadjustment:

The picture size is on the vertical and horizontal axis is abnormal.

Test Point :

Adjustment :

V SIZE (EVR),
H CENTER (EVR),
V POSITION (EVR)
(For model with 13 inch CRT)

Specification :

Refer to descriptions below.

INPUT :

Video Input Jack,
Monoscope Pattern Signal

Mode :

STOP

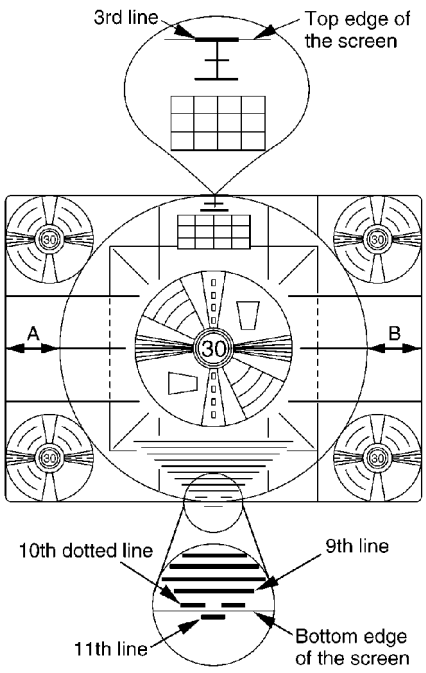
Equipment :

NTSC Video Pattern Generator

(For model with 13 inch CRT)

1. **Supply a Monoscope Pattern Signal to the Video Input Jack.**
2. **Select H CENTER in EVR adjustment mode and adjust so that A is approximately equal to width B.**
3. **Select V SIZE in EVR adjustment mode and adjust so that the top 3rd line is just in view.**
4. **Confirm that the 10th dotted line is in view and that the 11th line is out of view.**
   If the line are not positioned correctly, select V POSITION in adjustment mode and adjust correctly.

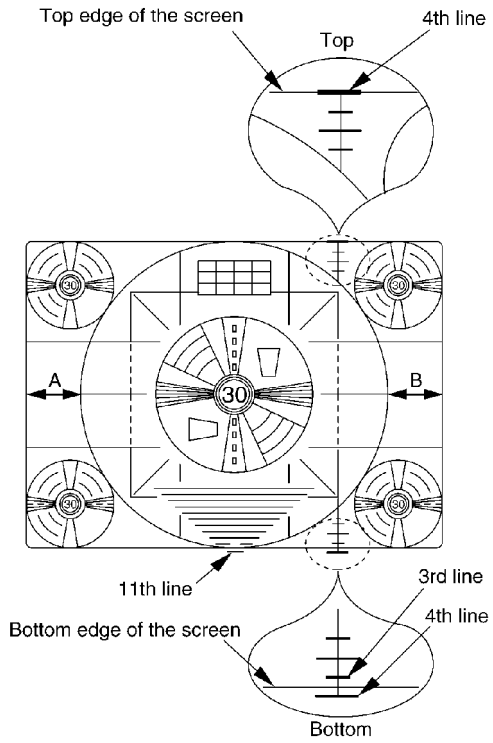
Fig.E9-1



(For model with 20 inch CRT)

1. **Supply a Monoscope Pattern Signal to the Video Input Jack.**
2. **Select H CENTER in EVR adjustment mode and adjust so that A is approximately equal to width B.**
3. **Select V SIZE in EVR adjustment mode and adjust so that the top 4th line is just in view.**
4. **Confirm that the bottom 3rd line is in view and that the bottom 4th line is out of view.**

Fig.E9-2



7.3.12. WHITE BALANCE ADJUSTMENT

Purpose:

To set the standard white level for each color temperature.

Symptom of Misadjustment:

White becomes bluish or reddish.

Test Point :

TP50 (CRT C.B.A)

Adjustment :

FOCUS CONTROL (Flyback Transformer),
SCREEN CONTROL (Flyback Transformer),
SUB BRIGHT (EVR),
G DRIVE (EVR),
B DRIVE (EVR),
R CUT -OFF (EVR),
G CUT -OFF (EVR),
B CUT -OFF (EVR)

Specification :

Refer to descriptions below.

INPUT :

Video Input Jack,
Monoscope Pattern Signal,
White Pattern Signal

Mode :

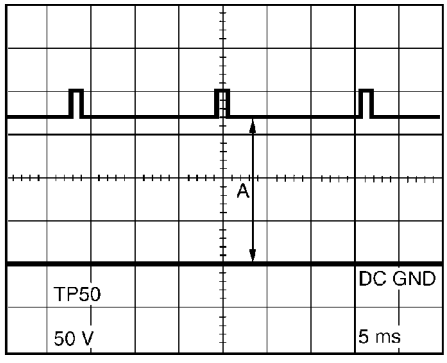
STOP

Equipment :

NTSC Video Pattern Generator,
White Pattern Generator,
Oscilloscope

1. **Supply a Monoscope Pattern Signal to the Video Input Jack.**
2. **Connect the Oscilloscope to TP50 on the CRT C.B.A. (Use TP47 for GND.)**
3. **Select SUB BRIGHT and move the shaded area to the value in EVR adjustment mode.**
4. **Adjust the FOCUS CONTROL on the Flyback Transformer so that the center of picture is the sharpest.**
5. **Press DISPLAY key (Service Switch) on the remote control for collapse scan. (Refer to How to Enter Service Mode.)**
6. **Turn the SCREEN CONTROL on Flyback Transformer fully counterclockwise.**
7. **Adjust SUB BRIGHT in EVR adjustment mode so that the level A is (140 VDC±5 VDC: For model with 13 inch CRT) or (170 VDC±5 VDC For model with 20 inch CRT).**

Fig.E10



8. **Turn the SCREEN CONTROL on the Flyback Transformer**

clockwise carefully and stop at the point where any color is first observed.

9. In EVR adjustment mode, select the two colors not observed in step 8 from the following control functions (B CUT -OFF, G CUT -OFF, or R CUT -OFF) and adjust so that the horizontal line becomes white.
   For example, if the horizontal line appeared red in step 8, select and adjust the B CUT -OFF and G CUT -OFF.
10. Supply a White Pattern Signal to the Video Input Jack.
11. Press DISPLAY key on the remote control again to return for full frame scan.
12. Select G DRIVE and B DRIVE in EVR adjustment mode and adjust so that the entire screen is white.
13. Select SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the minimum (C0) and while turning SUB BRIGHT value from minimum (C0) up to maximum (3F), confirm that the screen is tracking the White Patternproperly. Repeat the above steps 5, 9, 11, and 12 until the screen is properly tracking the White Pattern.

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value.

7.3.13. SUB BRIGHTNESS ADJUSTMENT

Purpose:

To set the optimum brightness level.

Symptom of Misadjustment:

The picture is too white or too black.

Test Point :

Adjustment :

SUB BRIGHT (EVR)

Specification :

Refer to descriptions below.

INPUT :

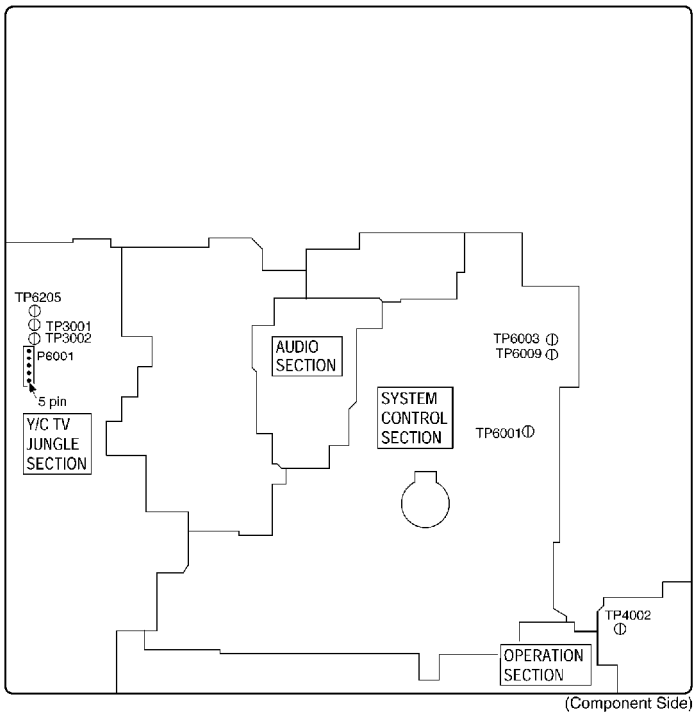
Mode :

STOP

1. **Do not input any signal to the unit.**
2. **Set INPUT SELECT item to LINE in SET UP TV menu to display black screen.**
3. **Select SUB BRIGHT in EVR adjustment mode, and adjust so that the black screen starts to turn grey (lighting only).**

7.4. TEST POINTS AND CONTROL LOCATION

TV/VCR Main C.B.A. (For model with 13 inch CRT)



(Component Side)

FUNCTION OF IMPORTANT TEST POINTS	
TP3001	Video Signal
TP3002	REC/PB Video envelope signal
TP4002	Normal Audio signal
TP6001	Service Test Point (inhibit sensors)
TP6003	Defeat Auto tracking function (connect to +5V(TP6009))
TP6009	+5V
TP6205	Head SW.

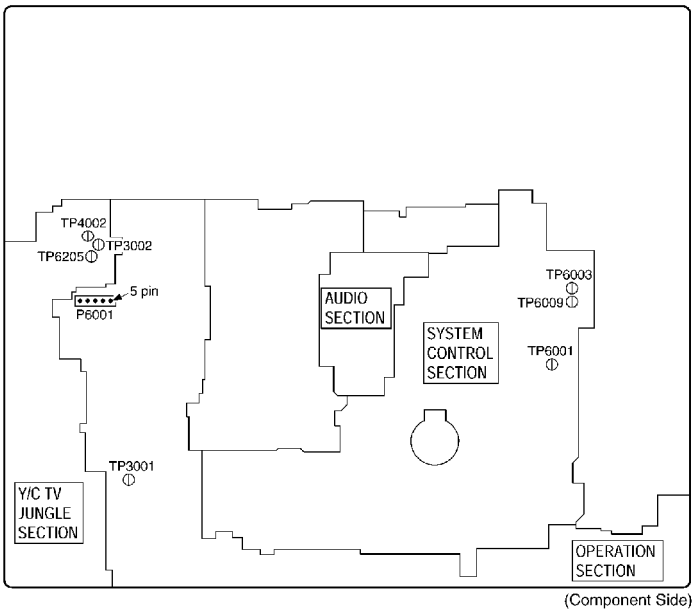
Test Point Information

● Test Point with a Test Pin.

Ⓘ Test Point with a jumper wire across a hole in the P.C.B.

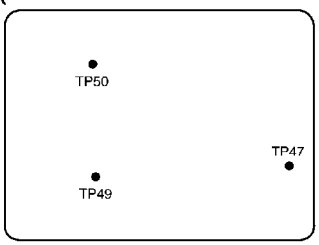
○ Test Point with no Test Pin.

TV/VCR Main C.B.A. (For model with 20 inch CRT)



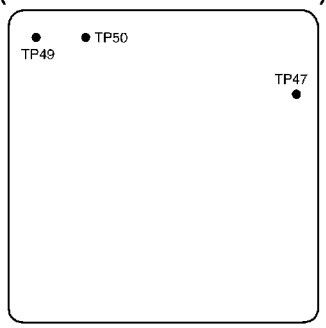
(Component Side)

CRT C.B.A.
(For model with 13 inch CRT)



(Foil Side)

CRT C.B.A.
(For model with 20 inch CRT)



(Foil Side)

8. SCHEMATIC DIAGRAMS

8.1. SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES

8.2. MAIN SCHEMATIC DIAGRAM

(Model: AG-513E)

(Model: AG-520E)

8.3. CAPSTAN STATOR SCHEMATIC DIAGRAM

8.4. HEAD AMP SCHEMATIC DIAGRAM

8.5. CRT SCHEMATIC DIAGRAM

(Model: AG-513E)

(Model: AG-520E)

8.6. INTERCONNECTION SCHEMATIC DIAGRAM

8.7. SIGNAL WAVEFORMS

8.8. VOLTAGE CHART

9. CIRCUIT BOARD LAYOUT

9.1. TV/VCR MAIN C.B.A.

(Model: AG-513E)

(Model: AG-520E)

9.2. CAPSTAN STATOR C.B.A.

9.3. HEAD AMP C.B.A.

9.4. CRT C.B.A.

(Model: AG-513E)

(Model: AG-520E)

10. BLOCK DIAGRAMS

10.1. POWER SUPPLY BLOCK DIAGRAM

10.2. VIDEO SIGNAL PATH BLOCK DIAGRAM

10.3. AUDIO SIGNAL PATH BLOCK DIAGRAM

10.4. SYSTEM CONTROL BLOCK DIAGRAM

10.5. SERVO BLOCK DIAGRAM

10.6. TV/YC PROCESS BLOCK DIAGRAM

11. EXPLODED VIEWS

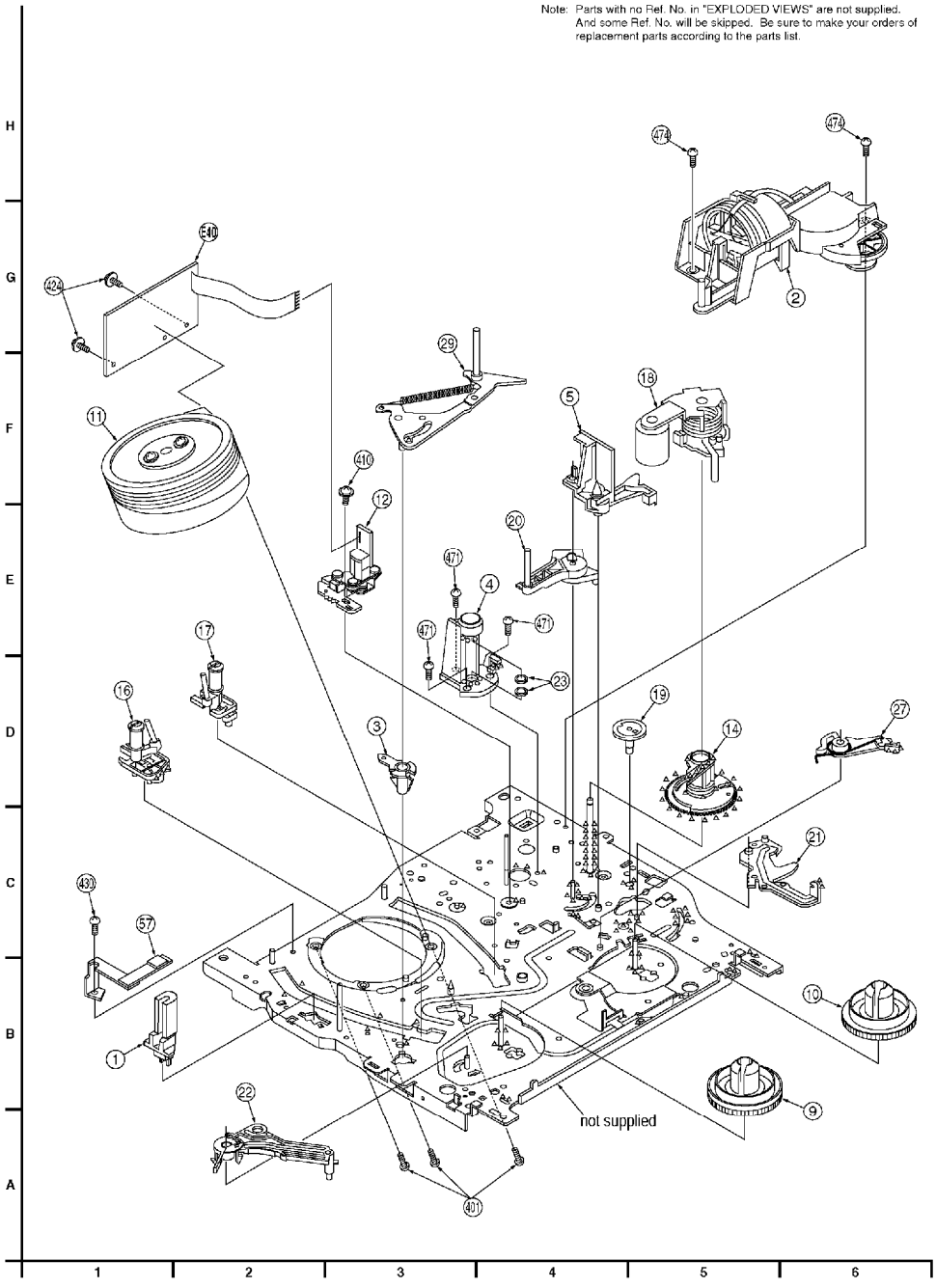
11.1. MECHANISM (TOP) SECTION

❶ MECHANISM (TOP) SECTION

LUBRICATION POINTS
When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
○○○	Spindle Oil	Purchase from Local Supplier	- - - - - -
△△△	Grease	Available from Factory	VFKS0081

Note: Parts with no Ref. No. in "EXPLODED VIEWS" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.

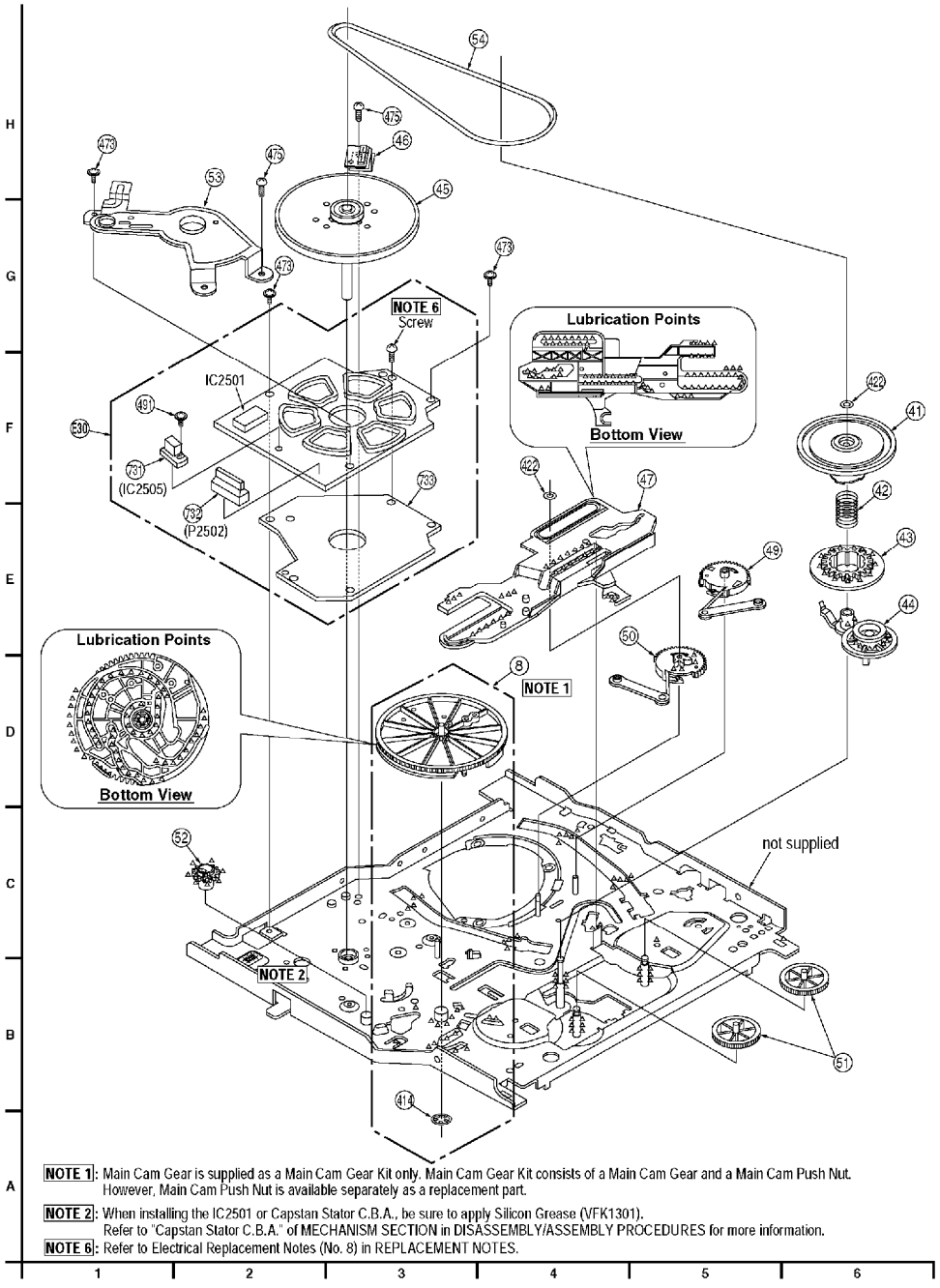


11.2. MECHANISM (BOTTOM) SECTION

❷ MECHANISM (BOTTOM) SECTION

LUBRICATION POINTS
When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
×××	Silicon Grease	Available from Factory	VFK1301
△△△	Grease	Available from Factory	VFKS0081



NOTE 1: Main Cam Gear is supplied as a Main Cam Gear Kit only. Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut. However, Main Cam Push Nut is available separately as a replacement part.

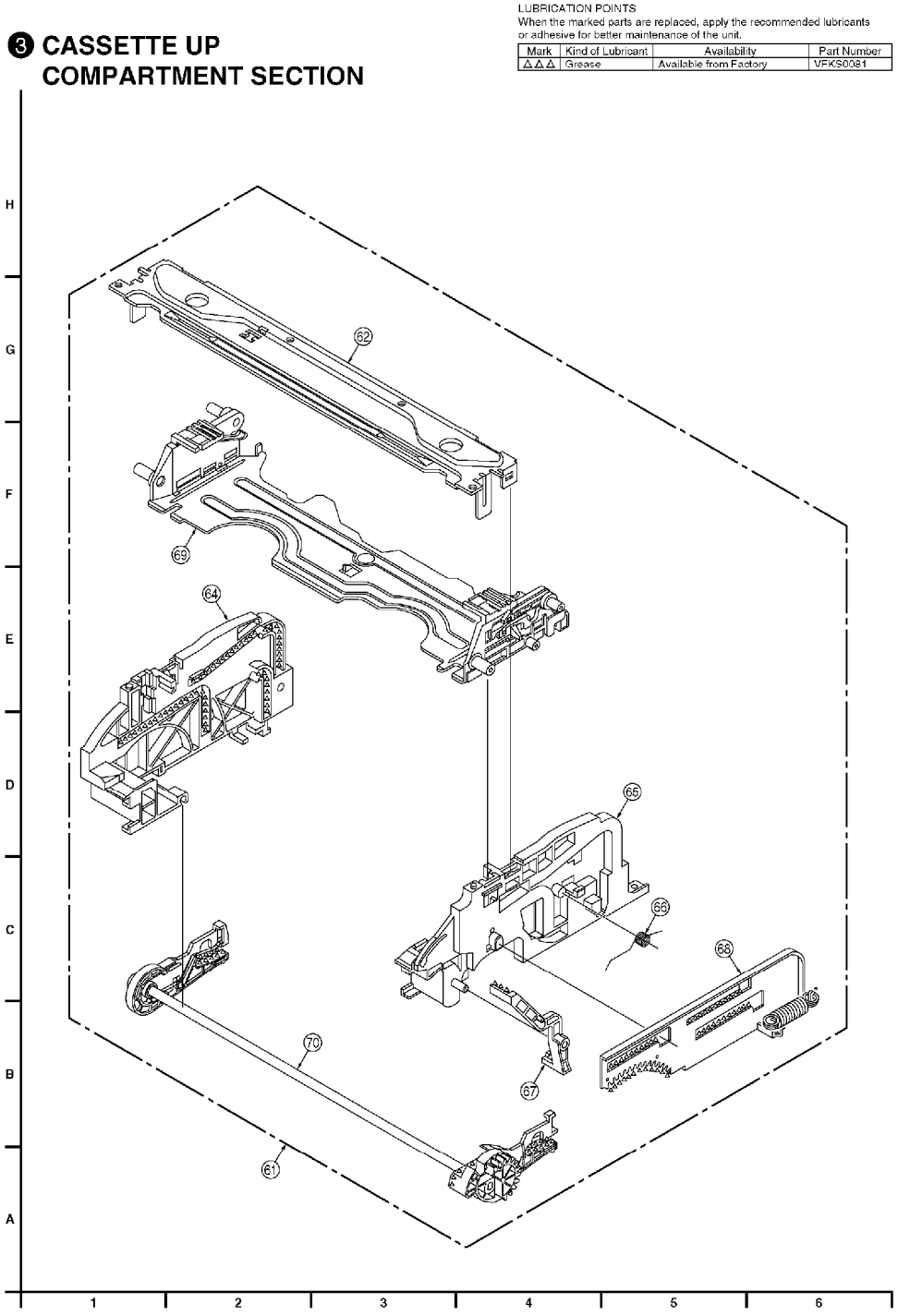
NOTE 2: When installing the IC2501 or Capstan Stator C.B.A., be sure to apply Silicon Grease (VFK1301). Refer to "Capstan Stator C.B.A." of MECHANISM SECTION in DISASSEMBLY/ASSEMBLY PROCEDURES for more information.

NOTE 6: Refer to Electrical Replacement Notes (No. 8) in REPLACEMENT NOTES.

11.3. CASSETTE UP COMPARTMENT SECTION

LUBRICATION POINTS
When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
△△△	Grease	Available from Factory	VFKS0081



11.4. CHASSIS FRAME SECTION (1)

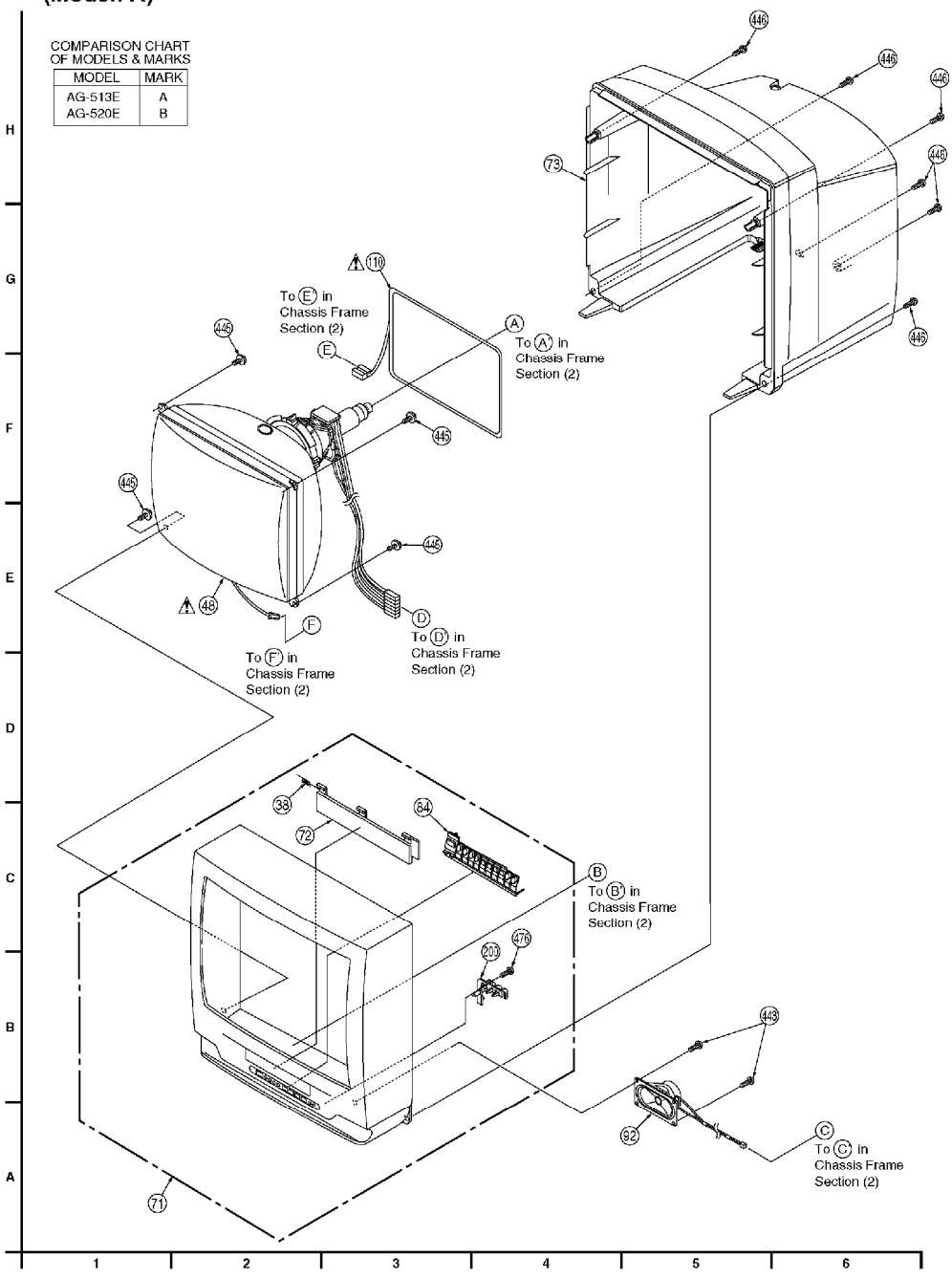
(Model: AG-513E)

❹ CHASSIS FRAME SECTION (1)
(Model: A)

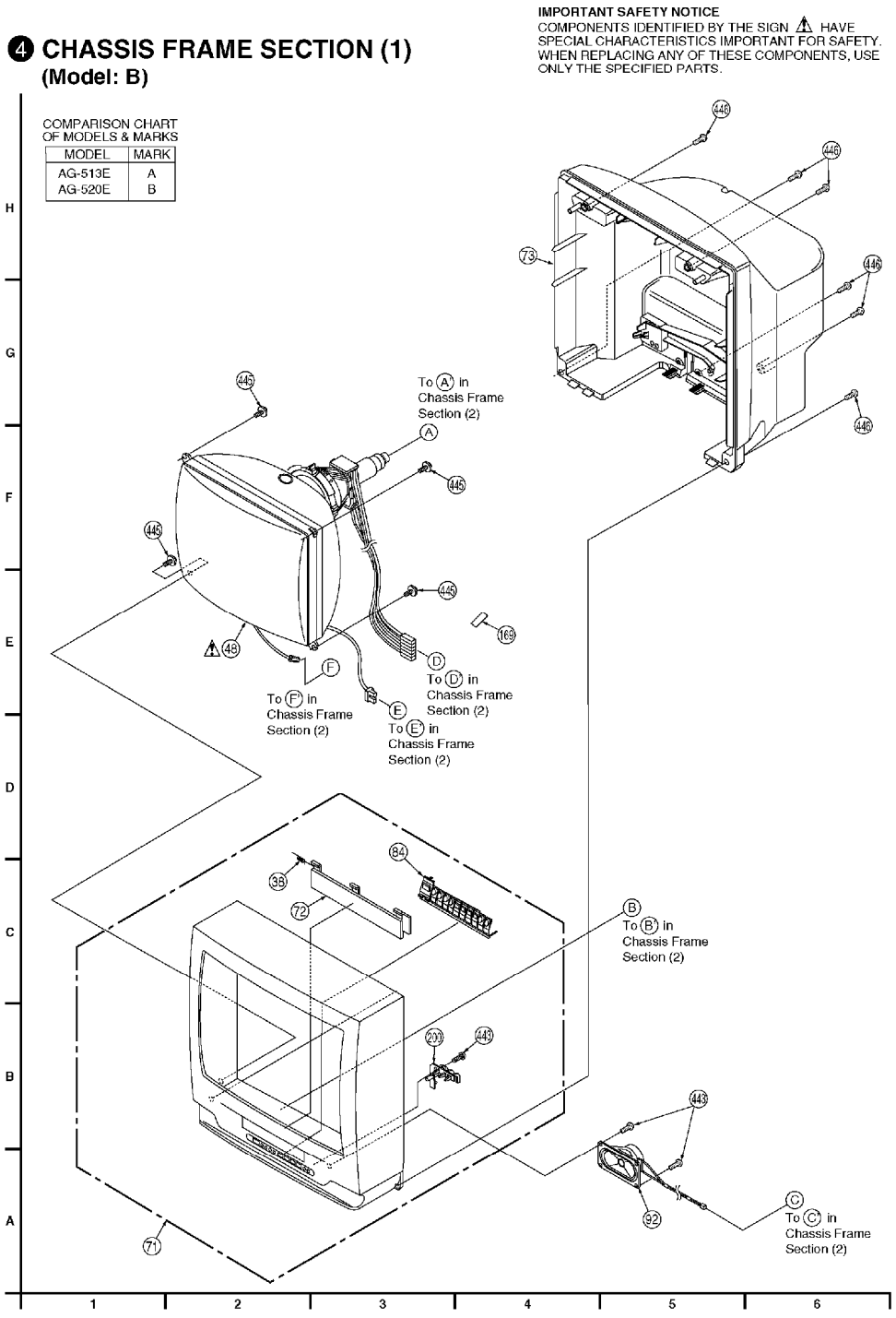
IMPORTANT SAFETY NOTICE
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

COMPARISON CHART OF MODELS & MARKS

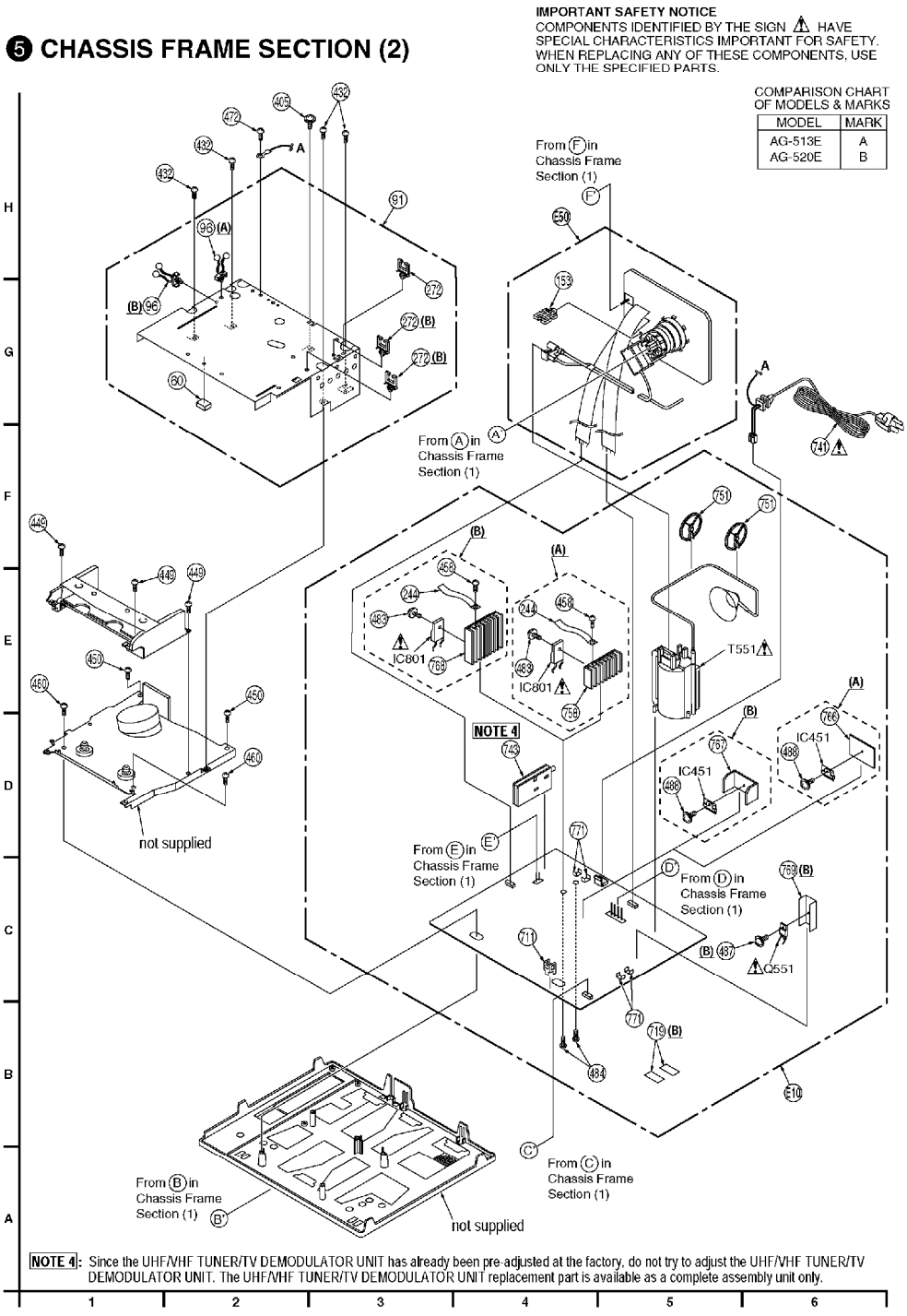
MODEL	MARK
AG-513E	A
AG-520E	B



(Model: AG-520E)



11.5. CHASSIS FRAME SECTION (2)


5 CHASSIS FRAME SECTION (2)
IMPORTANT SAFETY NOTICE
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.
COMPARISON CHART OF MODELS & MARKS
MODEL | MARK
AG-513E | A
AG-520E | B
From (F) in Chassis Frame Section (1)
From (A) in Chassis Frame Section (1)
From (E) in Chassis Frame Section (1)
From (D) in Chassis Frame Section (1)
From (B) in Chassis Frame Section (1)
From (C) in Chassis Frame Section (1)
not supplied
not supplied
IC801
IC801
IC451
IC451
T551
Q551
NOTE 4
NOTE 4: Since the UHF/VHF TUNER/TV DEMODULATOR UNIT has already been pre-adjusted at the factory, do not try to adjust the UHF/VHF TUNER/TV DEMODULATOR UNIT. The UHF/VHF TUNER/TV DEMODULATOR UNIT replacement part is available as a complete assembly unit only.

11.6. PACKING PARTS AND ACCESSORIES SECTION

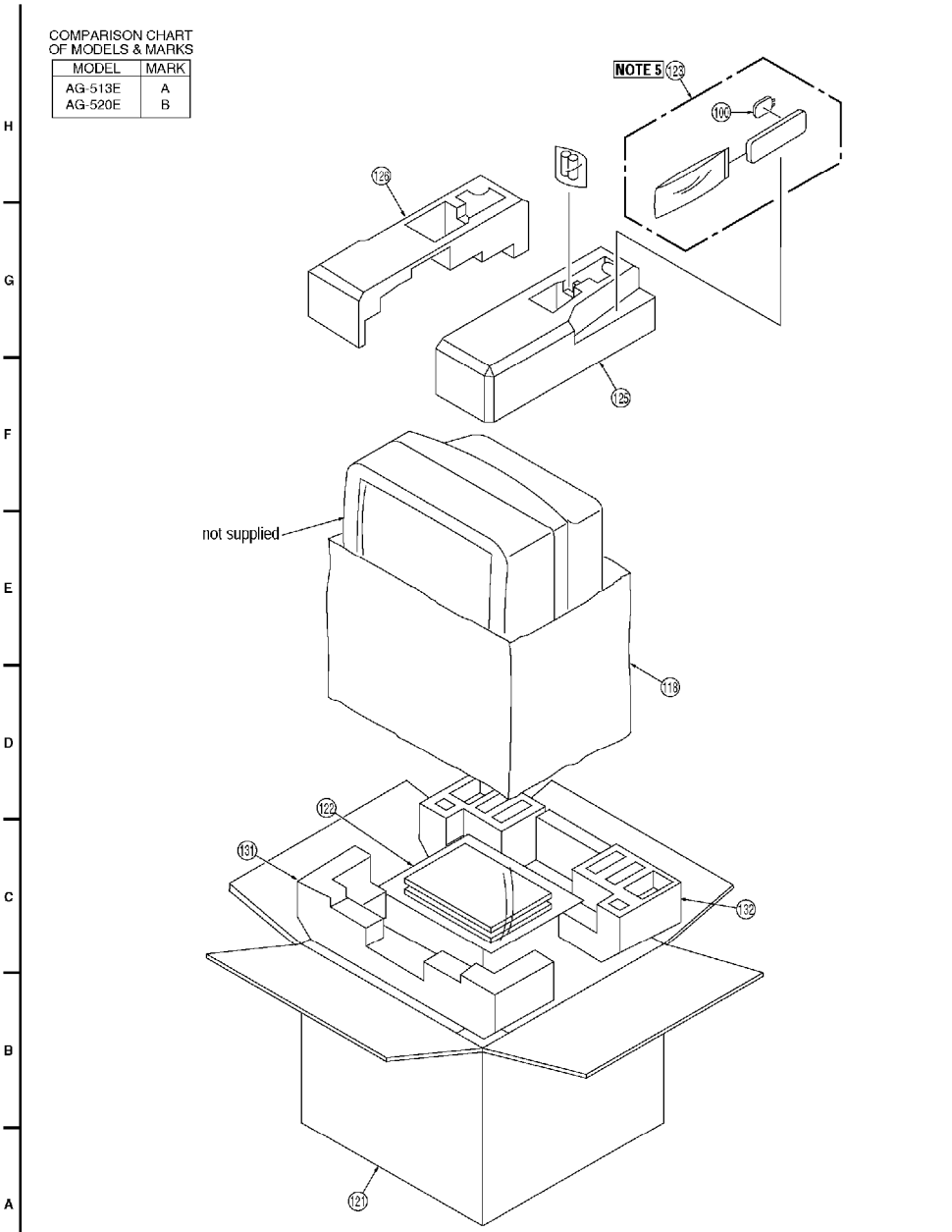
(Model:AG-513E)

❻ PACKING PARTS AND ACCESSORIES SECTION

(Model: A)

COMPARISON CHART
OF MODELS & MARKS

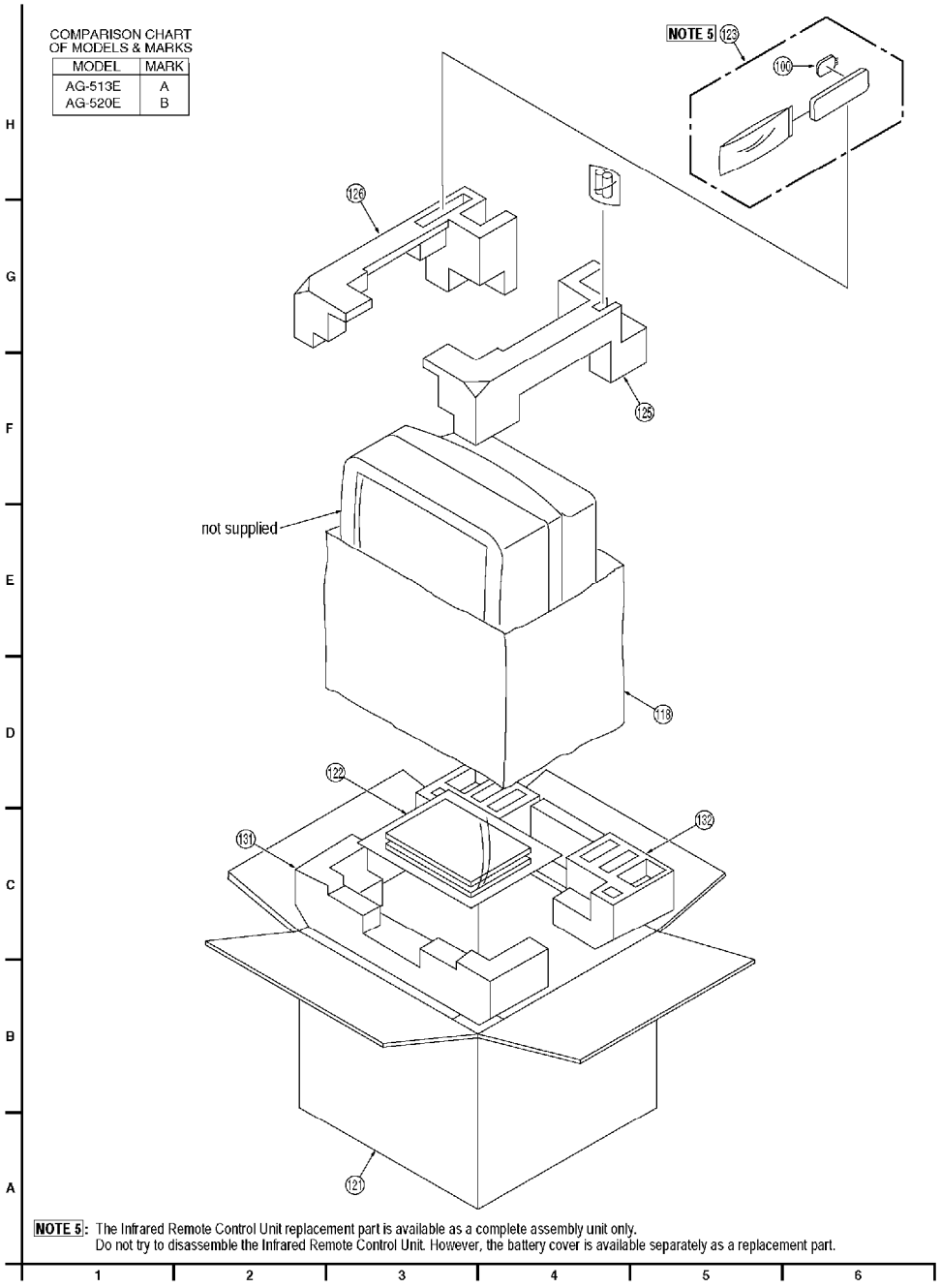
MODEL	MARK
AG-513E	A
AG-520E	B



NOTE 5: The Infrared Remote Control Unit replacement part is available as a complete assembly unit only.
Do not try to disassemble the Infrared Remote Control Unit. However, the battery cover is available separately as a replacement part.

(Model: AG-520E)

❻ PACKING PARTS AND ACCESSORIES SECTION
(Model: B)



NOTE 5: The Infrared Remote Control Unit replacement part is available as a complete assembly unit only.
Do not try to disassemble the Infrared Remote Control Unit. However, the battery cover is available separately as a replacement part.

12. REPLACEMENT PARTS LISTS

BEFORE REPLACING PARTS, READ THE FOLLOWING:

12.1. REPLACEMENT NOTES

12.1.1. General Notes

1. Use only original replacement parts:

To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list.

2. **IMPORTANT SAFETY NOTICE**
   Components identified by the sign ⚠ have special characteristics important for safety. When replacing any of these components, use only the specified parts.
3. **SPECIAL NOTE**
   All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.
4. **Parts with no Ref. No. in "EXPLODED VIEWS" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list. / “<R>” in Remarks column indicatesrecommended parts. / “<M>” in Remarks column indicates needed in the / periodical maintenance.**
5. **Parts different in shape or size may be used. However, only interchangeable parts will be supplied as service replacement parts.**
6. **All of parts are supplied from MKA.**
7. **Item numbers with capital letter E (Example: E10, E20,...) in the Ref. No. column are shown in the exploded views.**
8. **Parts whose Ref. Nos. are the same are interchangeable as replacement parts. Any of these parts may be ordered and used as a replacement part.**

12.1.2. Mechanical Replacement Notes

1. **Section No. of parts shown in Exploded Views are / indicated in the Remarks column.**
2. **Main Cam Gear is supplied as a Main Cam Gear Kit / (Ref. No. 8) only. Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut. However, Main Cam Push Nut is available separately as a replacement part.**

3. The Infrared Remote Control Unit (Ref. No. 123) / replacement part is available as a complete assembly unit only. Do not try to disassemble the Infrared Remote / Control Unit. However, the battery cover is available / separately as a replacementpart.
4. Main Cam Push Nut (Ref. No. 414) is not reusable.
   If removed, install a new one.

12.1.3. Electrical Replacement Notes

1. Unless otherwise specified;
   All resistors are in Ω, K = 1,000 Ω, M = 1,000 kΩ.
2. Abbreviation
   RTL: Retention Time Limited
   This indicates that the retention time is limited for this item. After the discontinuation of this item in production, it will no longer be available.
   NR: Non Repairable Board Ass'y
   MGF CHIP: Metal Glaze Film Chip
   C CHIP: Ceramic Chip
   COMPLX CMP: Complex Component
   W FLMPRF: Wirewound Flameproof
   C.B.A.: Circuit Board Assembly
   P.C.B.: Printed Circuit Board
   E.S.D.: Electrostatically Sensitive Devices
3. SERVICE OF CHIP PARTS
   When servicing chip parts, please use a soldering iron of less than 30 W. Refer to "IC, TRANSISTOR AND CHIP PART INFORMATION" page.
4. When replacing 0 Ω resistor, a wire can be substituted for it.
5. When installing the IC2501 (AN3846SC) or Capstan / Stator C.B.A., be sure to apply Silicon Grease (VFK1301). Refer to "Capstan Stator C.B.A." of / MECHANISM SECTION in DISASSEMBLY/ ASSEMBLY PROCEDURES.
6. Since the UHF/VHF TUNER/TV DEMODULATOR UNIT (Ref. No. 743) has already been pre-adjusted at the / factory, do not try to adjust the UHF/VHF TUNER/TV DEMODULATOR UNIT. The UHF/

VHF TUNER/TV DEMODULATORUNIT replacement part is available as a complete assembly unit only.

7. **EEP ROM IC (IC6004), TV/VCR MAIN C.B.A. / replacement note: After replacing EEP ROM IC (IC6004) or TV/VCR MAIN C.B.A., be sure to write the initial data with remote / control. Refer to "HOW TO INITIALIZE MEMORY IC" in SERVICE NOTES.**
8. **The Capstan Stator C.B.A. (Ref. No. E30) as a service part is supplied with the Screw installed on it. Please note that there is no functional difference between the units with or without the Screw.**

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B

12.2. MECHANICAL REPLACEMENT PARTS LIST

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B

MECHANICAL REPLACEMENT PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	VBSS0033	FULL ERASE HEAD	1
2	VXKS0901	MOTOR BLOCK UNIT	1 / <R> <M>
3	LSDB0045	TENSION ARM BOSS	1
4	VXDS0212	CAPSTAN HOLDER UNIT	1
5	LSMD0209	OPENER PIECE	1
8	VVGS0009	MAIN CAM GEAR KIT	2 <M>
9	LSDR0002	S REEL TABLE	1 / <R> <M>
10	LSDR0003	T REEL TABLE	1 / <R> <M>
11	VEGS0454	CYLINDER UNIT	1 / <R> <M>
12	VEHS0596	AUDIO CONTROL/ERASE HEAD UNIT	1 / <R> <M>
14	LSDG0112	LIFT GEAR	1
16	VXDS0213	LOADING POST BASE-S UNIT	1 / <R> <M>
17	VXDS0214	LOADING POST BASE-T UNIT	1 / <R> <M>
18	VXLS1094	PINCH ARM UNIT	1 / <R> <M>
19	LSDG0110	INTERMEDIATE GEAR A	1
20	VXLS1101	P5 ARM UNIT	1 <R>
21	LSML0131	DRIVE RACK ARM	1
22	VXLS1103	TENSION CONTROL ARM UNIT	1
23	LSMX0129	OIL SEAL	1
27	VXLS1100	T BRAKE UNIT	1 / <R> <M>
29	VXLS1102	TENSION ARM UNIT	1 / <R> <M>
38	LSMB0221	CASSETTE DOOR SPRING (A)	4
38	LSMB0230	CASSETTE DOOR SPRING (B)	4
41	VXPS0389	CENTER CLUTCH UNIT	2

Ref. No.	Part No.	Part Name & Description	Remarks
42	VMBS1151	CHANGING GEAR SPRING	2
43	LSDG0114	CHANGING GEAR	2
44	VXLS1091	IDLER ARM UNIT	2
45	VXPS0391	CAPSTAN ROTOR UNIT	2 / <R> <M>
46	LSMA0387	STOPPER ANGLE	2
47	LSMM0003	MAIN ROD	2
48	LXQVB01131	PICTURE TUBE UNIT (A)	4 ⚠
48	LXQVB01201	PICTURE TUBE UNIT (B)	4 ⚠
49	VXLS1099	S LOADING ARM UNIT	2
50	VXLS1098	T LOADING ARM UNIT	2
51	LSDG0116	REEL GEAR	2
52	LSDG0111	INTERMEDIATE GEAR B	2
53	LSMA0423	SUPPORT ANGLE	2
54	LSDV0007	CAPSTAN BELT SQUARE,RUBBER 2MM	2 / <R> <M>
57	VXSS0010	GROUNDING PLATE UNIT	1
60	VMFS0311	CUSHION	5
61	VXYS1347	CASSETTE UP ASS'Y	3 <R>
62	LSMA0352	TOP PLATE	3 <R>
64	LSMD0174	SIDE PLATE L	3
65	LSMD0173	SIDE PLATE R	3
66	LSMB0218	SUPPORT SPRING	3
67	LSML0096	OPENER LEVER	3
68	VXLS1111	DRIVE RACK UNIT	3
69	VXAS4423	HOLDER UNIT	3 <R>
70	VXLS1110	WIPER ARM UNIT	3
71	LXQKY09131	FRONT CABINET ASS'Y (A)	4
71	LXQKY08201	FRONT CABINET ASS'Y (B)	4
72	LKK688050A	CASSETTE DOOR-LID (A)	4 <R>
72	LKK688051A	CASSETTE DOOR-LID (B)	4 <R>
73	LKV60605A	REAR COVER (A)	4
73	LKV60504A	REAR COVER (B)	4
84	LBX61079B	OPERATION BUTTON (A)	4
84	LBX61080B	OPERATION BUTTON (B)	4
91	LXQUS01131K	TOP SHIELD PLATE ASS'Y (A)	5
91	LXQUS01201K	TOP SHIELD PLATE ASS'Y (B)	5
92	LXQAS01J13	SPEAKER UNIT	4
96	LML69002A	CLAMPER	5
100	LSKF0360	BATTERY COVER	6 <R>
110	LLJ69006Z	DEGAUSSING COIL (A)	4 ⚠
118	LPE64003A	BAG,POLYETHYLENE (A)	6
118	LPE64004A	BAG,POLYETHYLENE (B)	6
121	LSPG1170	PACKING CASE,PAPER (A)	6 <R>
121	LSPG1171	PACKING CASE,PAPER (B)	6 <R>
122	LSQF0480	FAN BAG	6 <R>
123	LSSQ0280	INFRARED REMOTE CONTROL UNIT	6 <R>
125	LPJ61029A	TOP CUSHION RIGHT,STYROFORM (A)	6 <R>
125	LPJ61028A	TOP CUSHION RIGHT,STYROFOAM (B)	6 <R>
126	LPJ61030A	TOP CUSHION LEFT,STYROFORM (A)	6 <R>
126	LPJ61027A	TOP CUSHION LEFT,STYROFORM (B)	6 <R>
131	LPJ62029A	BOTTOM CUSHION FRONT,STYROFOAM (A)	6 <R>
131	LPJ62027A	BOTTOM CUSHION FRONT,STYROFOAM (B)	6 <R>
132	LPJ62030A	BOTTOM CUSHION REAR,STYROFOAM (A)	6 <R>
132	LPJ62028A	BOTTOM CUSHION REAR,STYROFOAM (B)	6 <R>

Ref. No.	Part No.	Part Name & Description	Remarks
153	TMM7443-1	CLAMPER	5
169	TSM10032-2	PERMALLOY MAGNETIC STRIP (B)	4
200	LKK683011A	PANEL LIGHT (A)	4
200	LKK683013A	PANEL LIGHT (B)	4
244	TUX77809	CLAMPER	5
272	TMM77412	CLAMPER	5
401	VHDS0475	SCREW,STEEL	1
405	VHDS0496	SCREW W/WASHER,STEEL	5
410	VHDS0498	SCREW W/WASHER,STEEL	1
414	VHNS0070	MAIN CAM PUSH NUT,STEEL	2
422	XWGV2D5G	WASHER,NYLON	2
424	XYC26+SF6J	SCREW W/WASHER,STEEL	1
430	XTV26+6FFZJ	TAPPING SCREW,STEEL	1
432	XTV3+8JR	TAPPING SCREW,STEEL	5
443	XTV4+12A	TAPPING SCREW,STEEL	4
445	THE492-4	SCREW W/WASHER,STEEL (A)	4
445	LHT60002Y	SCREW,STEEL (B)	4
446	XTV4+16A	TAPPING SCREW,STEEL	4
449	VHDS0493	TAPPING SCREW,STEEL	5
450	VHDS0309	SCREW,STEEL	5
458	XTV3+8J	TAPPING SCREW,STEEL	5
460	XTN4+12A	TAPPING SCREW,STEEL	5
471	XSN26+5	SCREW,STEEL	1
472	VHDS0297	TAPPING SCREW,STEEL	5
473	XYN26+C6	SCREW W/WASHER,STEEL	2
474	LSHD0056	TAPPING SCREW,STEEL	1
475	XTV26+5FJ	TAPPING SCREW,STEEL	2
476	XTV3+12G	TAPPING SCREW 3X12 (A)	4
483	XYN3+F10S	SCREW W/WASHER,STEEL	5
484	XTW3+10J	TAPPING SCREW,STEEL	5
487	XYN3+J8	SCREW W/WASHER,STEEL	5
488	XYN3+F6S	SCREW W/WASHER,STEEL	5
491	XYN2+J7	SCREW W/WASHER,STEEL	2
711	PNA4611M00HC	INFRARED RECEIVER UNIT	5
719	VMFS0136	SHEET,NYLON-RAYON	5
731(IC2505)	EZMPS300F12	MR HEAD	2
732(P2502)	LSJS0097	CONNECOR 12P	2
733	LSMA0384	BACK PLATE,STEEL	2
741	LSJA0380	AC CORD W/PLUG	5 ⚠ / <R>
743	ENG36706G	TUNER,UHF/VHF NR	5
751	LML69001A	ANODE LEAD CLAMPER	5
758	TUC77616	HEAT SINK	5
766	TUC76677-1	HEAT SINK	5
767	TUC77626	HEAT SINK	5
768	TUC77603-1	HEAT SINK	5
769	LUS23005B	HEAT SINK	5
771	EYF52BC	FUSE HOLDER	5
771	EYF52BC	FUSE HOLDER	5
E10	VEPS3098D	TV/VCR MAIN C.B.A. (A)	5 RTL / <R>
E10	VEPS3096G	TV/VCR MAIN C.B.A. (B)	5 RTL / <R>
E30	VEMS0342	CAPSTAN STATOR C.B.A. NR	2 <R>
E40	VEPS5042A	HEAD AMP C.B.A.	1 RTL / <R>
E50	LRP63004C	CRT C.B.A. (A)	5 RTL / <R>
E50	LRP63022A	CRT C.B.A. (B)	5 RTL / <R>

SERVICE FIXTURES AND TOOLS

Ref. No.	Part No.	Part Name & Description	Remarks
	VFMS0003H6	VHS ALIGNMENT TAPE	<R>
	VFKS0081	GREASE	
	VFK0329	POST ADJUSTMENT DRIVER	<R>
	VFK1301	SILICON GREASE	<R>
	VFK27	HEAD CLEANING STICK	<R>
	VFK0330	H-POSITION ADJUSTMENT DRIVER	<R>
	TSM10032-2	PERMALLOY MAGNETIC STRIP	

12.3. ELECTRICAL REPLACEMENT PARTS LIST

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B

PRINTED CIRCUIT BOARD ASSEMBLY

Ref. No.	Part No.	Part Name & Description	Remarks
E10	VEPS3098D	TV/VCR MAIN C.B.A. (A)	E.S.D. RTL <R>
E10	VEPS3096G	TV/VCR MAIN C.B.A. (B)	E.S.D. RTL <R>
E30	VEMS0342	CAPSTAN STATOR C.B.A. NR	<R>
E40	VEPS5042A	HEAD AMP C.B.A.	RTL <R>
E50	LRP63004C	CRT C.B.A. (A)	RTL <R>
E50	LRP63022A	CRT C.B.A. (B)	RTL <R>

12.3.1. TV/VCR MAIN C.B.A.

(Model: A)

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC451	LA7837	IC, LINEAR	<R>
IC501	TLP621GR	IC, LINEAR	⚠ <R>
IC501	0N3131-R	IC, LINEAR	⚠ <R>
IC501	0N3131-R.KT	IC, LINEAR	⚠ <R>
IC801	STR30130	IC, LINEAR	⚠ <R>
IC1001	0N3131-R.KT	IC, LINEAR	⚠ <R>
IC1001	0N3131-S.KT	IC, LINEAR	⚠ <R>
IC2601	AN3808K	IC, LINEAR	<R>
IC3001	AN3479FBP-A	IC, LINEAR	<R>
IC3201	MN3885S	IC, CCD 1H DELAY	E.S.D. / <R>
IC4501	LA4285	IC, LINEAR	<R>
IC5301	AN5367FB	IC, LINEAR	<R>
IC6001	MN101D07HCB	IC, 8BIT MICROCONTROLLER	E.S.D. / <R>
IC6002	RPI-303	PHOTO INTERRUPUTER	<R>
IC6003	RPI-303	PHOTO INTERRUPUTER	<R>
IC6004	BR24C01AFWE2	IC, 1K EEP ROM	E.S.D. / <R>
IC6004	AT24C01A10SI	IC, 1K EEP ROM	E.S.D. / <R>
IC6004	KS24C011IS	IC, 1K EEP ROM	E.S.D. / <R>
IC6004	M24C01-MN6	IC, 1K EEP ROM	E.S.D. / <R>
IC6005	PST3147NR	IC, CMOS STANDARD LOGIC	E.S.D. / <R>
IC6005	RN5VS47CA-TR	IC, CMOS STANDARD LOGIC	E.S.D. / <R>
IC6005	XC61CC4702MR	IC, CMOS STADNARD LOGIC	E.S.D. / <R>

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q431	2SA733(TQ)	TRANSISTOR SI PNP	
Q431	2SA1175	TRANSISTOR SI PNP	
Q431	2SA1175(TH)	TRANSISTOR SI PNP	
Q432	2SC3311A(R)	TRANSISTOR SI NPN	
Q433	2SB1322A(R)	TRANSISTOR SI PNP	
Q434	2SC3311A(R)	TRANSISTOR SI NPN	
Q501	2SC2482KT6	TRANSISTOR SI NPN	
Q502	2SC945A(TQ)	TRANSISTOR SI NPN	
Q502	2SC2785(TH)	TRANSISTOR SI NPN	
Q502	2SC2785(TJ)	TRANSISTOR SI NPN	
Q541	2SB709A(RS)	TRANSISTOR SI PNP CHIP	
Q542	2SD601A	TRANSISTOR SI NPN CHIP	
Q542	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q551	2SD2586LBK	TRANSISTOR SI NPN	⚠
Q571	2SD601A	TRANSISTOR SI NPN CHIP	
Q571	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q581	2SA1321TPE6	TRANSISTOR SI NPN	
Q581	2SA1767(Q)	TRANSISTOR SI NPN	
Q581	2SB1221(Q)	TRANSISTOR SI NPN	
Q801	2SC945A(TKA)	TRANSISTOR SI NPN	
Q801	2SC1684(Q,R,S)	TRANSISTOR SI NPN	
Q801	2SC2785(TE)	TRANSISTOR SI NPN	
Q801	2SC2785(TF)	TRANSISTOR SI NPN	
Q801	2SC2785(TH)	TRANSISTOR SI NPN	
Q801	2SC2785(TJ)	TRANSISTOR SI NPN	
Q801	2SC2785(TK)	TRANSISTOR SI NPN	

Ref. No.	Part No.	Part Name & Description	Remarks
Q801	2SC3311A(Q,R,S)	TRANSISTOR SI NPN	
Q801	2SC945A(TPA)	TRANSISTOR SI NPN	
Q801	2SC945A(TQA)	TRANSISTOR SI NPN	
Q1001	2SC4533LP.KT	TRANSISTOR SI NPN	⚠
Q1001	2SC5130LF608	TRANSISTOR SI NPN	⚠
Q1002	2SD2259	TRANSISTOR SI NPN	
Q1002	2SD1458	TRANSISTOR SI NPN	
Q1003	2SD1819ARS	TRANSISTOR SI NPN CHIP	
Q1003	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q1004	2SB709A(RS)	TRANSISTOR SI PNP CHIP	
Q1004	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q1005	2SB1218ARS	TRANSISTOR SI PNP CHIP	
Q1005	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q1051	2SD2159(T)	TRANSISTOR SI NPN	
Q1051	2SD1581(T)	TRANSISTOR SI NPN	
Q1052	2SD601(RS)	TRANSISTOR SI NPN CHIP	
Q1052	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q1053	2SD235800A	TRANSISTOR SI NPN CHIP	
Q1053	2SD2097TV2R	TRANSISTOR SI NPN CHIP	
Q3001	2SB709A	TRANSISTOR SI PNP CHIP	
Q3001	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q3002	2SD601A	TRANSISTOR SI NPN CHIP	
Q3002	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q3301	2SD601A	TRANSISTOR SI NPN CHIP	
Q3301	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q4001	2SB709A	TRANSISTOR SI PNP CHIP	
Q4001	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q4002	2SD601(RS)	TRANSISTOR SI NPN CHIP	
Q4003	2SD601(RS)	TRANSISTOR SI NPN CHIP	
Q4101	2SD601A	TRANSISTOR SI NPN CHIP	
Q4101	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q4171	2SD601A	TRANSISTOR SI NPN CHIP	
Q4171	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q5301	2SD601A	TRANSISTOR SI NPN CHIP	
Q5301	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q5901	2SD2259	TRANSISTOR SI NPN	
Q5901	2SD1858-RTV2	TRANSISTOR SI NPN	
Q6001	2SB709A	TRANSISTOR SI PNP CHIP	
Q6001	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q6002	2SD601A	TRANSISTOR SI NPN CHIP	
Q6002	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q6003	2SD601A	TRANSISTOR SI NPN CHIP	
Q6003	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q6004	2SB709A	TRANSISTOR SI PNP CHIP	
Q6004	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q6005	2SB709A	TRANSISTOR SI PNP CHIP	
Q6005	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q6006	2SD601A	TRANSISTOR SI NPN CHIP	
Q6006	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q6009	VEKS5707	PHOTO SENSOR UNIT	
Q6010	VEKS5707	PHOTO SENSOR UNIT	

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D401	ERB12-01V	DIODE SI	
D401	ERB12-01	DIODE SI	
D401	ERB12-01RKV1	DIODE SI	
D502	MA165	DIODE SI	
D502	1SS119	DIODE SI	
D502	1SS133T	DIODE SI	
D503	ERB43-04V	DIODE SI	
D503	ES1V	DIODE SI	
D504	MA4047-M	DIODE ZENER 4.7V	
D504	MA4047-H	DIODE ZENER 4.7V	
D504	RD4.7ESAB	DIODE ZENER 4.7V	
D504	RD4.7ESAB2	DIODE ZENER 4.7V	
D504	04AZ4.7ZTPA7	DIODE ZENER 4.7V	
D505	MA165	DIODE SI	
D505	1SS119	DIODE SI	
D505	1SS133T	DIODE SI	
D506	MA165	DIODE SI	
D506	1SS119	DIODE SI	
D506	1SS133T	DIODE SI	
D541	MA165	DIODE SI	
D541	1SS119	DIODE SI	
D541	1SS133T	DIODE SI	
D542	MA4180-M	DIODE ZENER 18V	
D543	MA165	DIODE SI	
D543	1SS119	DIODE SI	
D543	1SS133T	DIODE SI	
D544	ERB43-04V	DIODE SI	
D544	ES1V	DIODE SI	
D553	ERB43-04V	DIODE SI	
D553	ES1V	DIODE SI	
D554	4148-TA	DIODE SI	
D554	MA167	DIODE SI	
D556	MA185	DIODE SI	
D558	ERB43-04V	DIODE SI	
D558	ES1V	DIODE SI	
D560	ERB43-04V	DIODE SI	
D560	ES1V	DIODE SI	
D591	TRPF5B0M050K	THERMISTOR	⚠
D591	VRPSKF5JM050	THERMISTOR	⚠
D801	ERC13-08V	DIODE SI	⚠
D801	EM02BMV	DIODE SI	⚠
D802	ERC13-08V	DIODE SI	⚠
D802	EM02BMV	DIODE SI	⚠
D803	ERC13-08V	DIODE SI	⚠
D803	EM02BMV	DIODE SI	⚠
D804	ERC13-08V	DIODE SI	⚠
D804	EM02BMV	DIODE SI	⚠
D805	4148-TA	DIODE SI	

Ref. No.	Part No.	Part Name & Description	Remarks
D881	ERZV10V361CS	SURGE ABSORBER	⚠
D882	ERZV10V361CS	SURGE ABSORBER	⚠
D1001	DB105G	DIODE SI	⚠
D1001	S1NB60-4101	DIODE SI	⚠
D1001	S1WBA60	DIODE SI	⚠
D1001	S1WBA60B	DIODE SI	⚠
D1002	ERA18-04	DIODE SI	
D1002	EG01	DIODE SI	
D1003	ERA18-04	DIODE SI	
D1003	EG01	DIODE SI	
D1005	ERA18-04	DIODE SI	
D1005	EG01	DIODE SI	
D1006	ERC30-01L3	DIODE SI	
D1006	RU3YXLFC1	DIODE SI	
D1007	MA188	DIODE SI	
D1007	1SS244T-77	DIODE SI	
D1008	ERB81-004	DIODE SI	
D1008	RK14	DIODE SI	
D1011	MA4051N-TAKT	DIODE ZENER 5.1V	
D1012	MA858	DIODE SI	
D1012	1SS135T-77	DIODE SI	
D1013	MA165	DIODE SI	
D1013	1SS119	DIODE SI	
D1013	1SS133T	DIODE SI	
D1015	MA2180LA	DIODE ZENER 18V	⚠
D1015	1N4746A-T	DIODE ZENER 18V	⚠
D1015	1N4746ARL	DIODE ZENER 18V	⚠
D1016	MA165	DIODE SI	
D1016	1SS119	DIODE SI	
D1016	1SS133T	DIODE SI	
D1051	MA4110N-H	DIODE ZENER 11V	
D4171	MA165	DIODE SI	
D4171	1SS119	DIODE SI	
D4171	1SS133T	DIODE SI	
D4591	RD9.1EW	DIODE ZENER 9.1V	
D5501	MA4062-L	DIODE ZENER 6.2V	⚠
D5602	MA165	DIODE SI	
D5602	1SS119	DIODE SI	
D5602	1SS133T	DIODE SI	
D5603	MA165	DIODE SI	
D5603	1SS119	DIODE SI	
D5603	1SS133T	DIODE SI	
D6001	VEKS5708	SENSOR LED UNIT	
D6003	MA165	DIODE SI	
D6003	1SS119	DIODE SI	
D6003	1SS133T	DIODE SI	
D6005	MA165	DIODE SI	
D6005	1SS119	DIODE SI	
D6005	1SS133T	DIODE SI	
D6009	MA165	DIODE SI	
D6009	1SS119	DIODE SI	

Ref. No.	Part No.	Part Name & Description	Remarks
D6009	1SS133T	DIODE SI	
D6301	SLP913C81HAB	LIGHT EMITTING DIODE RED	
D6302	SLP413C81HAB	LIGHT EMITTING DIODE ORANGE	
D6303	SLP313C81HAB	LIGHT EMITTING DIODE GREEN	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R401	ERDS2TJ821	CARBON 1/4W 820	
R402	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R405	ERDS1TJ102	CARBON 1/2W 1K	
R409	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R410	ERDS2TJ152	CARBON 1/4W 1.5K	
R411	ERJ6GEYJ823V	MGF CHIP 1/10W 82K	
R413	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R414	ERDS1FJ2R2	CARBON 1/2W 2.2	⚠
R422	ERD25FJ101P	CARBON 1/4W 100	⚠
R427	ERQ14ZJ1R5P	FUSE 1/4W 1.5	⚠
R431	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R432	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R433	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R434	ERDS2TJ103	CARBON 1/4W 10K	
R435	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R436	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R466	ERJ6GEYJ683V	MGF CHIP 1/10W 68K	
R468	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R469	ERDS2TJ222	CARBON 1/4W 2.2K	
R470	ERDS2TJ152	CARBON 1/4W 1.5K	
R471	ERDS2TJ391	CARBON 1/4W 390	
R472	ERDS2TJ471	CARBON 1/4W 470	
R473	ERDS2TJ101	CARBON 1/4W 100	
R474	ERDS2TJ222	CARBON 1/4W 2.2K	
R475	ERDS2TJ222	CARBON 1/4W 2.2K	
R476	ERDS2TJ561	CARBON 1/4W 560	
R477	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R478	ERDS2TJ332	CARBON 1/4W 3.3K	
R481	ERDS2TJ182	CARBON 1/4W 1.8K	
R482	ERDS2TJ150	CARBON 1/4W 15	
R501	ERDS2TJ681	CARBON 1/4W 680	
R502	ERDS2TJ332	CARBON 1/4W 3.3K	
R503	ER0S2THF1052	PRECISION METAL FILM 1/4W 10.5K	⚠
R503	ER0S2TKF1052	PRECISION METAL FILM 1/4W 10.5K	⚠
R503	VRESR4TF1052	PRECISION METAL FILM 1/4W 10.5K	⚠
R505	ERDS2TJ561	CARBON 1/4W 560	
R509	ERDS2TJ101	CARBON 1/4W 100	
R510	ERDS2TJ472	CARBON 1/4W 4.7K	
R511	ERG2ANJ222H	METAL OXIDE 2W 2.2K	
R514	ERDS2TJ271	CARBON 1/4W 270	
R515	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R516	LAR05272J09	W FLMPRF 5W 2.7K	
R519	ERDS2TJ822	CARBON 1/4W 8.2K	
R520	ERDS2TJ562	CARBON 1/4W 5.6K	

Ref. No.	Part No.	Part Name & Description	Remarks
R524	ERDS2TJ223	CARBON 1/4W 22K	
R525	ERDS2TJ222	CARBON 1/4W 2.2K	
R529	ERDS2TJ103	CARBON 1/4W 10K	
R531	ERDS2TJ223	CARBON 1/4W 22K	
R541	ERDS2TJ473	CARBON 1/4W 47K	
R542	ERDS2TJ103	CARBON 1/4W 10K	
R543	ERDS2TJ472	CARBON 1/4W 4.7K	
R545	ERDS2TJ331	CARBON 1/4W 330	
R546	ERDS2TJ103	CARBON 1/4W 10K	
R547	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R548	ERDS2TJ104	CARBON 1/4W 100K	
R552	ERDS2TJ273	CARBON 1/4W 27K	
R553	ERDS2TJ102	CARBON 1/4W 1K	
R554	ERDS2TJ103	CARBON 1/4W 10K	
R555	ERDS2TJ154	CARBON 1/4W 150K	
R556	ERDS2TJ823	CARBON 1/4W 82K	
R557	ERG2SJ471H	METAL OXIDE 2W 470	
R558	ERG2ANJ471H	METAL OXIDE 2W 470	
R561	ERQ1CJP2R2S	FUSE 1W 2.2	⚠
R571	ERDS2TJ101	CARBON 1/4W 100	
R572	ERDS2TJ331	CARBON 1/4W 330	
R573	ERDS2TJ221	CARBON 1/4W 220	
R574	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R581	ERDS1FJ2R2	CARBON 1/2W 2.2	⚠
R582	ERDS1FJ2R7P	CARBON 1/2W 2.7	⚠
R584	ERDS2TJ562	CARBON 1/4W 5.6K	
R585	ERDS2TJ473	CARBON 1/4W 47K	
R586	ERDS2TJ393	CARBON 1/4W 39K	
R801	LAR03R82K02	W FLMPRF 3W 0.82	⚠
R802	ERDS1FJ103P	CARBON 1/2W 10K	⚠
R802	ERDS1FPJ103	CARBON 1/2W 10K	⚠
R804	ERF10ZJ331	W FLMPRF 10W 330	
R805	ERDS2TJ104	CARBON 1/4W 100K	
R806	ERQ14AJ470P	FUSE 1/4W 47	⚠
R810	ERDS2TJ103	CARBON 1/4W 10K	
R813	ERDS2TJ104	CARBON 1/4W 100K	
R818	VRESC2TK825T	CARBON 1/2W 8.2M	⚠
R818	VRESC2TK825T	CARBON 1/2W 8.2M	⚠
R865	ERDS2TJ222	CARBON 1/4W 2.2K	
R1003	VRESE2TJ334T	CARBON 1/2W 330K	
R1004	ERG2SJ333H	METAL OXIDE 2W 33K	
R1005	ERG1SJ560P	METAL OXIDE 1W 56	
R1006	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R1007	ERDS2TJ101	CARBON 1/4W 100	
R1008	ERDS2TJ392	CARBON 1/4W 3.9K	
R1010	ERD25FJ100P	CARBON 1/4W 10	⚠
R1010	ERD25FPJ100P	CARBON 1/4W 10	⚠
R1010	VRESF4FJ100P	CARBON 1/4W 10	⚠
R1011	ERD25FJ100P	CARBON 1/4W 10	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
R1011	ERD25FPJ100P	CARBON 1/4W 10	⚠
R1011	VRESF4FJ100P	CARBON 1/4W 10	⚠
R1014	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R1015	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R1016	ERJ8GEYJ562V	MGF CHIP 1/8W 5.6K	
R1017	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1018	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R1019	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R1020	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R1022	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R1025	VRESE2TJ150T	CARBON 1/2W 15	
R1051	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R1052	ERDS2TJ153	CARBON 1/4W 15K	
R1053	ERDS2TJ153	CARBON 1/4W 15K	
R1057	ERDS2TJ331	CARBON 1/4W 330	
R1058	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R1076	VLQSH02R101K	COIL 100UH	
R2601	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2602	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2603	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2604	ERDS2TJ1R0	CARBON 1/4W 1	
R2605	ERDS2TJ1R2	CARBON 1/4W 1.2	
R2606	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R3001	ERDS2TJ101	CARBON 1/4W 100	
R3006	ERDS2TJ101	CARBON 1/4W 100	
R3016	ERJ6GEYJ121V	MGF CHIP 1/10W 120	
R3017	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R3024	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R3025	ERJ6GEYJ125V	MGF CHIP 1/10W 1.2M	
R3026	ERJ6GEYJ474V	MGF CHIP 1/10W 470K	
R3028	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R3029	ERJ6GEYJ151V	MGF CHIP 1/10W 150	
R3032	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R3035	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3036	ERJ6GEYG102V	MGF CHIP 1/10W 1K	
R3037	ERJ6GEYG102V	MGF CHIP 1/10W 1K	
R3038	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R3077	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R3083	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R3084	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R3086	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R3087	ERJ6GEYJ684V	MGF CHIP 1/10W 680K	
R3091	ERJ6GEYJ750V	MGF CHIP 1/10W 75	
R3301	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R3302	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R3303	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R4001	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4002	ERJ6GEYJ334V	MGF CHIP 1/10W 330K	
R4003	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R4004	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4005	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	
R4006	ERJ6GEYJ681V	MGF CHIP 1/10W 680	
R4007	ERJ6GEYJ821V	MGF CHIP 1/10W 820	

Ref. No.	Part No.	Part Name & Description	Remarks
R4008	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R4009	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4010	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4011	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4012	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4014	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4015	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R4018	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4021	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4051	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R4052	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4101	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R4102	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R4103	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4171	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4172	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4173	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R4175	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4502	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4504	ERJ6GEYJ823V	MGF CHIP 1/10W 82K	
R4509	ERDS2TJ100	CARBON 1/4W 10	
R4521	ERQ1ABJP8R2S	FUSE 1W 8.2	⚠
R4523	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R4591	ERDS2TJ681	CARBON 1/4W 680	
R4592	ERDS2TJ681	CARBON 1/4W 680	
R4593	ERDS2TJ681	CARBON 1/4W 680	
R4594	ERDS2TJ681	CARBON 1/4W 680	
R4701	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5301	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R5304	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R5305	ERJ6GEYJ224V	MGF CHIP 1/10W 220K	
R5306	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5308	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R5309	ERJ6GEYJ274V	MGF CHIP 1/10W 270K	
R5311	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5312	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5313	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5314	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5315	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5316	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5317	ERDS2TJ101	CARBON 1/4W 100	
R5324	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5325	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5401	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5402	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	
R5403	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R5405	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R5406	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5407	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R5501	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R5502	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	
R5503	ERDS2TJ471	CARBON 1/4W 470	
R5504	ERJ6GEYJ101V	MGF CHIP 1/10W 100	

Ref. No.	Part No.	Part Name & Description	Remarks
R5505	ERJ6ENF3241V	MGF CHIP 1/10W 3.24K	⚠
R5506	ERDS2TJ473	CARBON 1/4W 47K	
R5507	ERDS2TJ101	CARBON 1/4W 100	
R5508	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5510	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5511	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5512	ERDS2TJ151	CARBON 1/4W 150	
R5513	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5515	ERDS2TJ332	CARBON 1/4W 3.3K	
R5601	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R5604	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R5611	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5612	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5614	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R5902	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R5932	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5933	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6001	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6002	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6003	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6004	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6005	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6006	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6007	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6009	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6016	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6017	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6018	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6019	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6020	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6021	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6022	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6023	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6024	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6026	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6027	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6028	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R6029	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6031	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6032	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6033	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6035	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6039	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6044	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6045	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6048	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6049	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6050	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6054	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R6055	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6056	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6060	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6061	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6062	ERJ6GEYJ101V	MGF CHIP 1/10W 100	

Ref. No.	Part No.	Part Name & Description	Remarks
R6065	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6067	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6068	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6070	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6071	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6072	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6073	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6075	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6086	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6088	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6089	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R6090	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R6091	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R6092	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6094	ERJ6GEYJ912V	MGF CHIP 1/10W 9.1K	
R6101	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R6102	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R6103	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R6104	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6105	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6110	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6111	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6112	ERJ6GEYJ224V	MGF CHIP 1/10W 220K	
R6113	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6114	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6115	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6116	ERDS2TJ101	CARBON 1/4W 100	
R6118	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6119	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6120	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6121	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6122	ERJ6GEYJ181V	MGF CHIP 1/10W 180	
R6123	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6124	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6125	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6126	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6127	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6130	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6131	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R6132	ERJ6GEYJ391V	MGF CHIP 1/10W 390	
R6133	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6134	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6135	ERJ6GEYJ475V	MGF CHIP 1/10W 4.7M	
R6136	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R6137	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6138	ERDS2TJ560T	CARBON 1/4W 56	
R6142	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R6143	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6144	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6146	ERJ6GEYJ912V	MGF CHIP 1/10W 9.1K	
R6147	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R6160	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6161	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6162	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	

Ref. No.	Part No.	Part Name & Description	Remarks
R6163	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6169	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6170	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6171	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6201	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6202	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6203	ERJ6GEYJ274V	MGF CHIP 1/10W 270K	
R6204	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R6205	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	
R6206	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6207	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6208	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R6209	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6210	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R6211	ERJ6GEYJ243V	MGF CHIP 1/10W 24K	
R6301	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6302	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6303	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6304	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6305	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6306	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6307	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6316	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R6401	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R7001	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7002	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7003	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7004	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7005	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R7006	ERJ6GEYJ271V	MGF CHIP 1/10W 270	
R7007	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C401	ECEA1HGE2R2	ELECTROLYTIC 50V 2.2UF	
C402	ECA1CM471B	ELECTROLYTIC 16V 470UF	
C408	ECA1HGE010KB	ELECTROLYTIC 50V 1UF	
C409	ECA1VM101B	ELECTROLYTIC 35V 100UF	
C413	ECQB1H104KF	POLYESTER 50V 0.1UF	
C414	ECA1EM102E	ELECTROLYTIC 25V 1000UF	
C418	ECA1VM221B	ELECTROLYTIC 35V 220UF	
C458	ECQB1H103KM	POLYESTER 50V 0.01UF	
C501	ECQB1H473KM3	POLYESTER 50V 0.047UF	
C510	ECKR2H681KB5	CERAMIC 500V 680PF	
C513	ECA1HM100B	ELECTROLYTIC 50V 10UF	
C524	ECKW3D221KBP	CERAMIC 2KV 220PF	⚠
C524	ECKC3D221KBP	CERAMIC 2KV 220PF	⚠
C531	ECA1HM3R3B	ELECTROLYTIC 50V 3.3UF	
C541	ECA1HM100B	ELECTROLYTIC 50V 10UF	
C543	ECA1HM100B	ELECTROLYTIC 50V 10UF	
C552	ECA1EM471B	ELECTROLYTIC 25V 470UF	
C553	ECKR2H471KB5	CERAMIC 500V 470PF	
C554	ECWH20562JVB	POLYESTER 2000V 5600PF	⚠
C554	ECWH15H562J4	POLYESTER 1.5KV 5600PF	⚠
C556	ECWF2334JBB	POLYESTER 500V 0.33UF	⚠
C556	ECWF2334JSB	POLYESTER 500V 0.33UF	⚠
C556	LSCFM2334JM	POLYESTER 500V 0.33UF	⚠
C558	ECA1VM101B	ELECTROLYTIC 35V 100UF	
C560	ECA2EM100E	ELECTROLYTIC 250V 10UF	⚠
C561	ECA2CM2R2B	ELECTROLYTIC 160V 2.2UF	
C563	ECEA180V33WE	ELECTROLYTIC 180V 33UF	
C571	ECA1HM3R3B	ELECTROLYTIC 50V 3.3UF	
C801	VCKSRNG472ZX	CERAMIC 250V 4700PF	
C802	VCKSRNG472ZX	CERAMIC 250V 4700PF	
C803	VCKSRNG472ZX	CERAMIC 250V 4700PF	
C804	VCKSRNG472ZX	CERAMIC 250V 4700PF	
C805	ECES2DU221EG	ELECTROLYTIC 200V 220UF	⚠
C806	ECA2DM100E	ELECTROLYTIC 200V 10UF	
C807	VSQ1003-F	ARRESTER	⚠
C808	ECQU2A823MLA	POLYESTER 250V 0.082UF	⚠
C808	LSCFQ2A823MC	POLYESTER 250V 0.082UF	⚠
C809	ECKATS221MB	CERAMIC 125V 220PF	⚠
C809	ECKETS221MB	CERAMIC 125V 220PF	⚠
C809	VCKSEJD221KW	CERAMIC 125V 220PF	⚠
C809	VCKSELD221KW	CERAMIC 125V 220PF	⚠
C809	VCKSHJD221KW	CERAMIC 125V 220PF	⚠
C809	VCKSHLD221KW	CERAMIC 125V 220PF	⚠
C809	VCKSTJG221KW	CERAMIC 250V 220PF	⚠
C809	VCKSTLG221KW	CERAMIC 250V 220PF	⚠
C809	VCKSUJD221KW	CERAMIC 125V 220PF	⚠
C809	VCKSULD221KW	CERAMIC 125V 220PF	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
C810	ECKATS221MB	CERAMIC 125V 220PF	⚠
C810	ECKETS221MB	CERAMIC 125V 220PF	⚠
C810	VCKSEJD221KW	CERAMIC 125V 220PF	⚠
C810	VCKSELD221KW	CERAMIC 125V 220PF	⚠
C810	VCKSHJD221KW	CERAMIC 125V 220PF	⚠
C810	VCKSHLD221KW	CERAMIC 125V 220PF	⚠
C810	VCKSTJG221KW	CERAMIC 250V 220PF	⚠
C810	VCKSTLG221KW	CERAMIC 250V 220PF	⚠
C810	VCKSUJD221KW	CERAMIC 125V 220PF	⚠
C810	VCKSULD221KW	CERAMIC 125V 220PF	⚠
C811	ECKATS332ME8	CERAMIC 250V 3300PF	⚠
C811	VCKST3G332MX	CERAMIC 250V 3300PF	⚠
C811	VCKSUKD332MX	CERAMIC 125V 3300PF	⚠
C811	VCKSUMD332MX	CERAMIC 125V 3300PF	⚠
C811	VCKSU3D332MX	C CHIP 125V 3300PF	⚠
C812	ECKATS332ME8	CERAMIC 250V 3300PF	⚠
C812	VCKST3G332MX	CERAMIC 250V 3300PF	⚠
C812	VCKSUKD332MX	CERAMIC 125V 3300PF	⚠
C812	VCKSUMD332MX	CERAMIC 125V 3300PF	⚠
C812	VCKSU3D332MX	C CHIP 125V 3300PF	⚠
C1001	ECKATS103MF	CERAMIC 250V 0.01UF	⚠
C1001	ECKETS103MF	CERAMIC 125V 0.01UF	⚠
C1001	VCKST3G103MY	CERAMIC 250V 0.01UF	⚠
C1001	VCKSU3D103MY	C CHIP 125V 0.01UF	⚠
C1002	ECKATS332ME8	CERAMIC 250V 3300PF	⚠
C1002	ECKDNB332ME8	CERAMIC 125V 3300PF	⚠
C1002	ECKETS332ME8	CERAMIC 125V 3300PF	⚠
C1002	VCKST3G332MX	CERAMIC 250V 3300PF	⚠
C1002	VCKSU3D332MX	C CHIP 125V 3300PF	⚠
C1003	ECKATS332ME8	CERAMIC 250V 3300PF	⚠
C1003	ECKETS332ME8	CERAMIC 125V 3300PF	⚠
C1003	VCKST3G332MX	CERAMIC 250V 3300PF	⚠
C1003	VCKSU3D332MX	C CHIP 125V 3300PF	⚠
C1004	ECEA2DU121YE	ELECTROLYTIC 200V 120UF	⚠
C1004	VCESAN2D121E	ELECTROLYTIC 200V 120UF	⚠
C1004	VCESR2D121XE	ELECTROLYTIC 200V 120UF	⚠
C1005	ECA2DHG4R7B	ELECTROLYTIC 200V 4.7UF	
C1006	ECKR2H221KB5	CERAMIC 500V 220PF	
C1007	ECUV1C224KBN	C CHIP 16V 0.22UF	
C1009	VCYSBRE183KX	CERAMIC 25V 0.018UF	
C1010	ECUV1H101JCN	C CHIP 50V 100PF	
C1011	ECA1HHG4R7B	ELECTROLYTIC 50V 4.7UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C1012	ECEA1PEE331	ELECTROLYTIC 18V 330UF	
C1013	ECA1EM331B	ELECTROLYTIC 25V 330UF	
C1014	ECA1HHG4R7I	ELECTROLYTIC 50V 4.7UF	
C1016	ECEA1PEE331	ELECTROLYTIC 18V 330UF	
C1017	ECA0JM102B	ELECTROLYTIC 6.3V 1000UF	
C1018	ECUV1E104KBN	C CHIP 25V 0.1UF	
C1021	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C1025	ECKETS221MB	CERAMIC 125V 220PF	⚠
C1025	ECKATS221MB	CERAMIC 125V 220PF	⚠
C1025	VCKSTLG221KW	CERAMIC 250V 220PF	⚠
C1025	VCKSU4D221KW	CERAMIC 125V 220PF	⚠
C1025	VCKSU5D221KW	C CHIP 125V 220PF	⚠
C1029	ECUV1H101JCN	C CHIP 50V 100PF	
C1030	VCYSBRE183KX	CERAMIC 25V 0.018UF	
C1051	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C1052	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C1058	ECEA0JEE101	ELECTROLYTIC 6.3V 100UF	
C1059	ECEA1CKA220	ELECTROLYTIC 16V 22UF	
C1083	ECKATS221MB	CERAMIC 125V 220PF	⚠
C1083	ECKETS221MB	CERAMIC 125V 220PF	⚠
C1083	VCKSEJD221KW	CERAMIC 125V 220PF	⚠
C1083	VCKSELD221KW	CERAMIC 125V 220PF	⚠
C1083	VCKSHJD221KW	CERAMIC 125V 220PF	⚠
C1083	VCKSHLD221KW	CERAMIC 125V 220PF	⚠
C1083	VCKSTJG221KW	CERAMIC 250V 220PF	⚠
C1083	VCKSTLG221KW	CERAMIC 250V 220PF	⚠
C1083	VCKSUJD221KW	CERAMIC 125V 220PF	⚠
C1083	VCKSULD221KW	CERAMIC 125V 220PF	⚠
C1084	ECKATS332ME8	CERAMIC 250V 3300PF	⚠
C1084	ECKETS332ME8	CERAMIC 125V 3300PF	⚠
C1084	VCKST3G332MX	CERAMIC 250V 3300PF	⚠
C1084	VCKSU3D332MX	C CHIP 125V 3300PF	⚠
C2601	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C2602	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C2603	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C2604	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2605	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2606	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2607	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2608	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C2609	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C2610	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C2611	ECUV1H103KBN	C CHIP 50V 0.01UF	
C2612	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C3003	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3004	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3006	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3007	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C3008	ECUV1H181JCN	C CHIP 50V 180PF	
C3009	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C3010	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3013	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C3015	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C3016	ECEA1CKS100	ELECTROLYTIC 16V 10UF	
C3019	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3020	ECEA1CKA220	ELECTROLYTIC 16V 22UF	
C3021	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3022	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C3023	ECUV1H680JCN	C CHIP 50V 68PF	
C3024	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3025	ECUV1E104KBN	C CHIP 25V 0.1UF	
C3026	ECUV1H822KBN	C CHIP 50V 8200PF	
C3027	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3030	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3031	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3032	ECUV1C474ZFN	C CHIP 16V 0.47UF	
C3034	ECUV1H181JCN	C CHIP 50V 180PF	
C3035	ECUV1H330JCN	C CHIP 50V 33PF	
C3036	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3038	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C3041	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3043	ECUV1H392KBN	C CHIP 50V 3900PF	
C3044	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3045	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C3046	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3047	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3048	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3050	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3053	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3055	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3056	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3057	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3058	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3060	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C3081	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
C3082	ECUV1H332KBN	C CHIP 50V 3300PF	
C3231	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C3232	ECUV1H102KBN	C CHIP 50V 1000PF	
C3234	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C3235	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3236	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3237	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3301	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3302	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C4001	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C4002	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4003	ECUV1H272KBN	C CHIP 50V 2700PF	
C4004	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4005	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C4006	ECUV1H102KBN	C CHIP 50V 1000PF	
C4007	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C4008	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C4009	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4010	ECUV1E333KBN	C CHIP 25V 0.033UF	
C4011	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4012	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4013	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C4014	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4018	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4020	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4051	ECUV1E333KBN	C CHIP 25V 0.033UF	
C4102	ECQB1562JF3	POLYESTER 100V 5600PF	
C4103	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4104	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4105	ECEA1CKA220	ELECTROLYTIC 16V 22UF	
C4171	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4502	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4504	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C4506	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C4508	ECA1CM221B	ELECTROLYTIC 16V 220UF	
C4509	ECUV1E473KBN	C CHIP 25V 0.047UF	
C4521	ECA1EM102B	ELECTROLYTIC 25V 1000UF	
C4524	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C5301	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C5302	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C5303	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C5305	ECEA1HKAR33	ELECTROLYTIC 50V 0.33UF	
C5306	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C5307	ECEA1CKN100	ELECTROLYTIC 16V 10UF	
C5308	ECEA1CKN100	ELECTROLYTIC 16V 10UF	
C5401	VCUSTBC224KB	C CHIP 16V 0.22UF	
C5402	ECUV1H222KBN	C CHIP 50V 2200PF	
C5403	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C5501	ECUV1E183KBN	C CHIP 25V 0.018UF	
C5502	ECUV1H681KBN	C CHIP 50V 680PF	
C5505	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C5506	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C5507	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C5508	ECUV1H221JSN	C CHIP 50V 220PF	
C5510	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C5511	ECUV1E333KBN	C CHIP 25V 0.033UF	
C5516	ECUV1E333KBN	C CHIP 25V 0.033UF	
C5601	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C5602	ECUV1E104KBN	C CHIP 25V 0.1UF	
C5603	ECUV1H150JCN	C CHIP 50V 15PF	
C5604	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C5605	ECUV1E153KBN	C CHIP 25V 0.015UF	
C5902	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C5903	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C5904	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C5905	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C5906	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C5932	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C6001	ECEA0JKA331	ELECTROLYTIC 6.3V 330UF	
C6002	ECUV1H080CCN	C CHIP 50V 8PF	
C6003	ECUV1H100CCN	C CHIP 50V 10PF	

Ref. No.	Part No.	Part Name & Description	Remarks
C6004	ECUV1E104KBN	C CHIP 25V 0.1UF	
C6006	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C6009	ECEA1CKS100	ELECTROLYTIC 16V 10UF	
C6011	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C6013	ECUV1H101JCN	C CHIP 50V 100PF	
C6017	ECUV1H101JCN	C CHIP 50V 100PF	
C6018	ECUV1H101JCN	C CHIP 50V 100PF	
C6020	ECUV1E104KBN	C CHIP 25V 0.1UF	
C6021	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C6023	ECUV1H103KBN	C CHIP 50V 0.01UF	
C6025	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C6029	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C6040	ECUV1H102KBN	C CHIP 50V 1000PF	
C6041	ECUV1H102KBN	C CHIP 50V 1000PF	
C6044	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6203	ECUV1H332KBN	C CHIP 50V 3300PF	
C6204	ECUV1H103KBN	C CHIP 50V 0.01UF	
C6205	ECUV1H330JCN	C CHIP 50V 33PF	
C6207	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C6208	ECEA1CKS100	ELECTROLYTIC 16V 10UF	
C6209	ECUV1H102KBN	C CHIP 50V 1000PF	
C6211	ECUV1E104KBN	C CHIP 25V 0.1UF	
C6212	ECUV1E104KBN	C CHIP 25V 0.1UF	
C6213	ECEA0JKS331I	ELECTROLYTIC 6.3V 330UF	
C6214	ECEA0JKS220	ELECTROLYTIC 6.3V 22UF	
C6215	ECUV1H272KBN	C CHIP 50V 2700PF	
C6216	ECUV1H103KBN	C CHIP 50V 0.01UF	
C6220	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C6221	ECEA0JKA221	ELECTROLYTIC 6.3V 220UF	
C6302	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C6401	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C6402	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C6403	ECUV1A105KBN	C CHIP 10V 1UF	
C6404	ECUV1H121JCN	C CHIP 50V 120PF	
C6406	ECEA1HKS010	ELECTROLYTIC 50V 1UF	
C6408	ECUV1H222KBN	C CHIP 50V 2200PF	
C6410	ECUV1H103KBN	C CHIP 50V 0.01UF	
C7002	ECUV1H102KBN	C CHIP 50V 1000PF	
C7006	ECA0JM102B	ELECTROLYTIC 6.3V 1000UF	
C7007	ECUV1H102KBN	C CHIP 50V 1000PF	
C7008	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C7010	ECEA1CKA100	ELECTROLYTIC 16V 10UF	

FILTERS

Ref. No.	Part No.	Part Name & Description	Remarks
FL4051	VLFS0014	FILTER	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L552	TSC925V	COIL	
L553	VLQSW07D220M	COIL 22UH	
L803	ELF18D650C	COIL 8.2MH	⚠
L803	ELF21V018A	LINE NOISE FILTER	⚠
L803	LLN63021A	LINE FILTER 1.7A 8.2MH	⚠
L803	LLN63055A	COIL	⚠
L1001	ELF15N005A	LINE FILTER 0.5A 18MH	⚠
L1001	VLQS0166	LINE FILTER 0.5A 18MH	⚠
L1001	VLQS0167	LINE FILTER 0.5A 18MH	⚠
L1001	VLQS0287	LINE FILTER 0.5A 18MH	⚠
L1002	VLQSAB7D220K	COIL 22UH	
L1003	VLQSAB7D100K	COIL 10UH	
L1006	VLPS0083	FILTER	
L1006	LSLF0065	INDUCTOR CHIP	
L3001	VLQSH02R390K	COIL 39UH	
L3002	ELESN101KA	COIL 100UH	
L3005	VLQSH02R330K	COIL 33UH	
L3010	ELESN470KA	COIL 47UH	
L3231	ELESN221KA	COIL 220UH	
L4001	VLQSU06R153K	COIL 15MH	
L4002	ELESN101KA	COIL 100UH	
L4004	VLQSH02R390K	COIL 39UH	
L4101	ELESN471KA	COIL 470UH	
L5901	ELESN101KA	COIL 100UH	
L6201	ELEXT101KE04	COIL 100UH	
L6401	ELEXT101KE04	COIL 100UH	
L6402	VLPS0111	CHIP BEAD INDUCTOR	
L6403	VLPS0111	CHIP BEAD INDUCTOR	
L6404	VLPS0111	CHIP BEAD INDUCTOR	
L6405	VLPS0111	CHIP BEAD INDUCTOR	
L7002	ELESN100KA	COIL 10UH	

CRYSTAL OSCILLATOR

Ref. No.	Part No.	Part Name & Description	Remarks
X5501	CSB503F38	CRYSTAL OSCILLATOR	
X5601	VSXS0190-TB	CRYSTAL OSCILLATOR	
X6001	VSXS0784	CRYSTAL OSCILLATOR	

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P801	VEKS5809	CONNECTOR CABLE W/OUT PLUG,200V	
P803	VJPS0303	CONNECTOR 2P	
P3001	VJPS0882	CONNECTOR 12P	
P4001	VJSS0888	FE CONNECTOR 2P	
P4591	VJPS0268	CONNECTOR 2P	
P6001	VJPS0275	CONNECTOR 5P	
P6201	LSJP0089	CONNECTOR 12P	
P6202	LSJP0088	CONNECTOR 12P	

SWITCHES

Ref. No.	Part No.	Part Name & Description	Remarks
SW6001	LSSH0002	LEAF SWITCH-SAFETY TAB	<R>
SW6002	LSSS0008	MODE SWITCH	<R>
SW6301	EVQ21405R	PUSH SWITCH	
SW6302	EVQ21405R	PUSH SWITCH	
SW6303	EVQ21405R	PUSH SWITCH	
SW6304	EVQ21405R	PUSH SWITCH	
SW6305	EVQ21405R	PUSH SWITCH	
SW6306	EVQ21405R	PUSH SWITCH	
SW6307	EVQ21405R	PUSH SWITCH	
SW6308	EVQ21405R	PUSH SWITCH	
SW6309	EVQ21405R	PUSH SWITCH	
SW6310	EVQ21405R	PUSH SWITCH	
SW6311	EVQ21405R	PUSH SWITCH	

FUSE& PROTECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
F801	XBA1C40NU100	FUSE 125V 4A	⚠ <R>
F801	VSFS0003A40	FUSE 4A	⚠ <R>
F1001	VSFS0003A16	FUSE 125V 1.6A	⚠ <R>
F1001	VSFS0032B16	FUSE 125V 1.6A	⚠ <R>
F1001	XBA1C16NU100	FUSE 125V 1.6A	⚠ <R>
PR1001	UNH000600A	IC PROTECTOR 1.5A	⚠ <R>
PR1001	ICP-N38-TP1	IC PROTECTOR 1.5A	⚠ <R>
PR1001	LSSF009A25E	IC PROTECTOR 1.5A	⚠ <R>
PR1002	UNH000600A	IC PROTECTOR 1.5A	⚠ <R>
PR1002	ICP-N38-TP1	IC PROTECTOR 1.5A	⚠ <R>
PR1002	LSSF009A25E	IC PROTECTOR 1.5A	⚠ <R>

RELAY

Ref. No.	Part No.	Part Name & Description	Remarks
RL801	TSEH0019	RELAY	⚠ <R>
RL801	LSSY0004	RELAY	⚠ <R>
RL801	TSEH0005	RELAY,120V	⚠ <R>
RL801	TSEH1860-1	RELAY	⚠ <R>
RL801	TSEH8007	RELAY,120V	⚠ <R>

TRANSFORMER

Ref. No.	Part No.	Part Name & Description	Remarks
T501	ETH09K6AZ	TRANSFORMER	<R>
T502	ETE16Z37AY	TRANSFORMER	⚠ <R>
T551	KFT2AB338F	TRANSFORMER	⚠ <R>
T1001	LSTP0105-1	TRANSFORMER	⚠ <R>
T1001	ETS28AD2J3AC	TRANSFORMER	⚠ <R>
T1001	ETS28AD2J3NC	TRANSFORMER	⚠ <R>
T1001	LSTP0105	TRANSFORMER	⚠ <R>
T1001	VTPS0041	TRANSFORMER	⚠ <R>
T1001	VTPS0041-1	TRANSFORMER	⚠ <R>
T1001	VTPS0042	TRANSFORMER	⚠ <R>
T1001	VTPS0042-1	TRANSFORMER	⚠ <R>
T4101	VLTS0304-1	TRANSFORMER	<R>

JACKS

Ref. No.	Part No.	Part Name & Description	Remarks
JK4591	LJP28016A	FRONT AUDIO/VIDEO JACK SOCKET	
JK4701	LJP68005A	EARPHONE JACK SOCKET	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
244	TUX77809	CLAMPER	
458	XTV3+8J	TAPPING SCREW,STEEL	
483	XYN3+F10S	SCREW W/WASHER,STEEL	
484	XTW3+10J	TAPPING SCREW,STEEL	
488	XYN3+F6S	SCREW W/WASHER,STEEL	
711	PNA4611M00HC	INFRARED RECEIVER UNIT	<R>
743	ENG36706G	TUNER,UHF/VHF NR	
751	LML69001A	ANODE LEAD CLAMPER	
758	TUC77616	HEAT SINK	
766	TUC76677-1	HEAT SINK	
771	EYF52BC	FUSE HOLDER	

12.3.2. TV/VCR MAIN C.B.A.

(Model: B)

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC451	LA7837	IC, LINEAR	<R>
IC501	TLP621GR	IC, LINEAR	⚠ <R>
IC501	0N3131-R	IC, LINEAR	⚠ <R>
IC501	0N3131-R.KT	IC, LINEAR	⚠ <R>
IC801	STR30130	IC, LINEAR	⚠ <R>
IC1001	0N3131-R.KT	IC, LINEAR	⚠ <R>
IC1001	0N3131-S.KT	IC, LINEAR	⚠ <R>
IC2601	AN3808K	IC, LINEAR	<R>
IC3001	AN3479FBP-A	IC, LINEAR	<R>
IC3201	MN3885S	IC, CCD 1H DELAY	E.S.D. / <R>
IC4501	LA4285	IC, LINEAR	<R>
IC5301	AN5368FB	IC, LINEAR	<R>
IC6001	MN101D07HCB	IC, 8BIT MICROCONTROLLER	E.S.D.
IC6002	RPI-303	PHOTO INTERRUPUTER	<R>
IC6003	RPI-303	PHOTO INTERRUPUTER	<R>
IC6004	BR24C01AFWE2	IC, 1K EEP ROM	E.S.D. / <R>
IC6004	AT24C01A10SI	IC, 1K EEP ROM	E.S.D. / <R>
IC6004	KS24C011IS	IC, 1K EEP ROM	E.S.D. / <R>
IC6004	M24C01-MN6	IC, 1K EEP ROM	E.S.D. / <R>
IC6005	PST3147NR	IC, CMOS STANDARD LOGIC	E.S.D. / <R>
IC6005	RN5VS47CA-TR	IC, CMOS STANDARD LOGIC	E.S.D. / <R>
IC6005	XC61CC4702MR	IC, CMOS STADNARD LOGIC	E.S.D. / <R>

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q431	2SA733(TQ)	TRANSISTOR SI PNP	
Q431	2SA1175	TRANSISTOR SI PNP	
Q431	2SA1175(TH)	TRANSISTOR SI PNP	
Q501	2SC2482KT6	TRANSISTOR SI NPN	
Q502	2SC945A(TQ)	TRANSISTOR SI NPN	
Q502	2SC2785(TH)	TRANSISTOR SI NPN	
Q502	2SC2785(TJ)	TRANSISTOR SI NPN	
Q541	2SB709A	TRANSISTOR SI PNP CHIP	
Q541	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q542	2SD601A	TRANSISTOR SI NPN CHIP	
Q542	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q551	2SD2578(RG)	TRANSISTOR SI NPN	
Q571	2SD601A	TRANSISTOR SI NPN CHIP	
Q571	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q581	2SA1321TPE6	TRANSISTOR SI NPN	
Q581	2SA1767(Q)	TRANSISTOR SI NPN	
Q581	2SB1221(Q)	TRANSISTOR SI NPN	
Q801	2SC945A(TKA)	TRANSISTOR SI NPN	
Q801	2SC1684(Q,R,S)	TRANSISTOR SI NPN	
Q801	2SC2785(TE)	TRANSISTOR SI NPN	
Q801	2SC2785(TF)	TRANSISTOR SI NPN	
Q801	2SC2785(TH)	TRANSISTOR SI NPN	
Q801	2SC2785(TJ)	TRANSISTOR SI NPN	
Q801	2SC2785(TK)	TRANSISTOR SI NPN	
Q801	2SC3311A(Q,R,S)	TRANSISTOR SI NPN	
Q801	2SC945A(TPA)	TRANSISTOR SI NPN	

Ref. No.	Part No.	Part Name & Description	Remarks
Q801	2SC945A(TQA)	TRANSISTOR SI NPN	
Q1001	2SC4533LP.KT	TRANSISTOR SI NPN	⚠
Q1001	2SC5130LF608	TRANSISTOR SI NPN	⚠
Q1002	2SD2259	TRANSISTOR SI NPN	
Q1002	2SD1458	TRANSISTOR SI NPN	
Q1003	2SD1819ARS	TRANSISTOR SI NPN CHIP	
Q1003	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q1004	2SB709A(RS)	TRANSISTOR SI PNP CHIP	
Q1004	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q1005	2SB1218ARS	TRANSISTOR SI PNP CHIP	
Q1005	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q1051	2SD2159(T)	TRANSISTOR SI NPN	
Q1051	2SD1581(T)	TRANSISTOR SI NPN	
Q1052	2SD601(RS)	TRANSISTOR SI NPN CHIP	
Q1052	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q1053	2SD235800A	TRANSISTOR SI NPN CHIP	
Q1053	2SD2097TV2R	TRANSISTOR SI NPN CHIP	
Q1070	2SA733(TK)	TRANSISTOR SI PNP	
Q1070	2SA1175(TE)	TRANSISTOR SI PNP	
Q1070	2SA1175(TF)	TRANSISTOR SI PNP	
Q1070	2SA1175(TH)	TRANSISTOR SI PNP	
Q1070	2SA1175(TJ)	TRANSISTOR SI PNP	
Q1070	2SA1175(TK)	TRANSISTOR SI PNP	
Q1070	2SA1309A(Q,R,S)	TRANSISTOR SI PNP	
Q1070	2SA564A(Q,R,S)	TRANSISTOR SI PNP	
Q1070	2SA733(TP)	TRANSISTOR SI PNP	
Q1070	2SA733(TQ)	TRANSISTOR SI PNP	
Q1071	2SD601A	TRANSISTOR SI NPN CHIP	
Q1071	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q3001	2SB709A	TRANSISTOR SI PNP CHIP	
Q3001	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q3002	2SD601A	TRANSISTOR SI NPN CHIP	
Q3002	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q3301	2SD601A	TRANSISTOR SI NPN CHIP	
Q3301	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q4001	2SB709A	TRANSISTOR SI PNP CHIP	
Q4001	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q4002	2SD601(RS)	TRANSISTOR SI NPN CHIP	
Q4003	2SD601(RS)	TRANSISTOR SI NPN CHIP	
Q4101	2SD601A	TRANSISTOR SI NPN CHIP	
Q4101	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q4171	2SD601A	TRANSISTOR SI NPN CHIP	
Q4171	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q5301	2SD601A	TRANSISTOR SI NPN CHIP	
Q5301	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q5901	2SD2259	TRANSISTOR SI NPN	
Q5901	2SD1858-RTV2	TRANSISTOR SI NPN	
Q6001	2SB709A	TRANSISTOR SI PNP CHIP	
Q6001	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q6002	2SD601A	TRANSISTOR SI NPN CHIP	
Q6002	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q6003	2SD601A	TRANSISTOR SI NPN CHIP	
Q6003	2SC2412K146R	TRANSISTOR SI NPN CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
Q6004	2SB709A	TRANSISTOR SI PNP CHIP	
Q6004	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q6005	2SB709A	TRANSISTOR SI PNP CHIP	
Q6005	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q6006	2SD601A	TRANSISTOR SI NPN CHIP	
Q6006	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q6009	VEKS5707	PHOTO SENSOR UNIT	
Q6010	VEKS5707	PHOTO SENSOR UNIT	

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D401	ERB12-01V	DIODE SI	
D401	ERB12-01	DIODE SI	
D401	ERB12-01RKV1	DIODE SI	
D502	MA165	DIODE SI	
D502	1SS119	DIODE SI	
D502	1SS133T	DIODE SI	
D503	ERB43-04V	DIODE SI	
D503	ES1V	DIODE SI	
D504	MA4047-M	DIODE ZENER 4.7V	
D504	MA4047-H	DIODE ZENER 4.7V	
D504	RD4.7ESAB	DIODE ZENER 4.7V	
D504	RD4.7ESAB2	DIODE ZENER 4.7V	
D504	04AZ4.7ZTPA7	DIODE ZENER 4.7V	
D505	MA165	DIODE SI	
D505	1SS119	DIODE SI	
D505	1SS133T	DIODE SI	
D506	MA165	DIODE SI	
D506	1SS119	DIODE SI	
D506	1SS133T	DIODE SI	
D541	MA165	DIODE SI	
D541	1SS119	DIODE SI	
D541	1SS133T	DIODE SI	
D542	MA4180-M	DIODE ZENER 18V	
D543	MA165	DIODE SI	
D543	1SS119	DIODE SI	
D543	1SS133T	DIODE SI	
D544	ERB43-04V	DIODE SI	
D544	ES1V	DIODE SI	
D553	ERB43-04V	DIODE SI	
D553	ES1V	DIODE SI	
D554	4148-TA	DIODE SI	
D554	MA167	DIODE SI	
D556	MA185	DIODE SI	
D558	ERB43-04V	DIODE SI	
D558	ES1V	DIODE SI	
D560	ERB44-04V	DIODE SI	
D591	TRPF5B0M050K	THERMISTOR	⚠
D591	VRPSKF5JM050	THERMISTOR	⚠
D801	ERC13-08V	DIODE SI	⚠
D801	EM02BMV	DIODE SI	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
D802	ERC13-08V	DIODE SI	⚠
D802	EM02BMV	DIODE SI	⚠
D803	ERC13-08V	DIODE SI	⚠
D803	EM02BMV	DIODE SI	⚠
D804	ERC13-08V	DIODE SI	⚠
D804	EM02BMV	DIODE SI	⚠
D805	4148-TA	DIODE SI	
D881	ERZV10V361CS	SURGE ABSORBER	⚠
D882	ERZV10V361CS	SURGE ABSORBER	⚠
D1001	DB105G	DIODE SI	⚠
D1001	S1NB60-4101	DIODE SI	⚠
D1001	S1WBA60	DIODE SI	⚠
D1001	S1WBA60B	DIODE SI	⚠
D1002	ERA18-04	DIODE SI	
D1002	EG01	DIODE SI	
D1003	ERA18-04	DIODE SI	
D1003	EG01	DIODE SI	
D1005	ERA18-04	DIODE SI	
D1005	EG01	DIODE SI	
D1006	ERC30-01L3	DIODE SI	
D1006	RU3YXLFC1	DIODE SI	
D1007	MA188	DIODE SI	
D1007	1SS244T-77	DIODE SI	
D1008	RK14	DIODE SI	
D1008	ERB81-004	DIODE SI	
D1011	MA4051N-TAKT	DIODE ZENER 5.1V	
D1012	MA858	DIODE SI	
D1012	1SS135T-77	DIODE SI	
D1013	MA165	DIODE SI	
D1013	1SS119	DIODE SI	
D1013	1SS133T	DIODE SI	
D1015	MA2180LA	DIODE ZENER 18V	⚠
D1015	1N4746A-T	DIODE ZENER 18V	⚠
D1015	1N4746ARL	DIODE ZENER 18V	⚠
D1016	MA165	DIODE SI	
D1016	1SS119	DIODE SI	
D1016	1SS133T	DIODE SI	
D1051	MA4110N-H	DIODE ZENER 11V	
D1070	MA4056-M	DIODE ZENER 5.6V	
D4171	MA165	DIODE SI	
D4171	1SS119	DIODE SI	
D4171	1SS133T	DIODE SI	
D4591	RD9.1EW	DIODE ZENER 9.1V	
D5501	MA4062-L	DIODE ZENER 6.2V	⚠
D5602	MA165	DIODE SI	
D5602	1SS119	DIODE SI	
D5602	1SS133T	DIODE SI	
D5603	MA165	DIODE SI	
D5603	1SS119	DIODE SI	

Ref. No.	Part No.	Part Name & Description	Remarks
D5603	1SS133T	DIODE SI	
D6001	VEKS5708	SENSOR LED UNIT	
D6003	MA165	DIODE SI	
D6003	1SS119	DIODE SI	
D6003	1SS133T	DIODE SI	
D6005	MA165	DIODE SI	
D6005	1SS119	DIODE SI	
D6005	1SS133T	DIODE SI	
D6009	MA165	DIODE SI	
D6009	1SS119	DIODE SI	
D6009	1SS133T	DIODE SI	
D6301	SLP913C81HAB	LIGHT EMITTING DIODE RED	
D6302	SLP413C81HAB	LIGHT EMITTING DIODE ORANGE	
D6303	SLP313C81HAB	LIGHT EMITTING DIODE GREEN	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R401	ERDS2TJ271	CARBON 1/4W 270	
R402	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R409	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R410	ERDS2TJ392	CARBON 1/4W 3.9K	
R411	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R413	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R414	ERDS1FJ1R2P	CARBON 1/2W 1.2	⚠
R422	ERD25FJ101P	CARBON 1/4W 100	⚠
R427	ERQ14AJ5R6P	FUSE 1/4W 5.6	⚠
R431	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R432	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R433	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R434	ERDS2TJ103	CARBON 1/4W 10K	
R435	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R436	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R466	ERJ6GEYJ683V	MGF CHIP 1/10W 68K	
R468	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R474	ERDS2TJ152	CARBON 1/4W 1.5K	
R501	ERDS2TJ681	CARBON 1/4W 680	
R502	ERDS2TJ332	CARBON 1/4W 3.3K	
R503	ER0S2THF1152	PRECISION METAL FILM 1/4W 11.5K	⚠
R503	ER0S2TKF1152	PRECISION METAL FILM 1/4W 11.5K	⚠
R503	VRESR4TF1152	PRECISION METAL FILM 1/4W 11.5K	⚠
R505	ERDS2TJ561	CARBON 1/4W 560	
R509	ERDS2TJ101	CARBON 1/4W 100	
R510	ERDS2TJ472	CARBON 1/4W 4.7K	
R511	ERG2ANJ222H	METAL OXIDE 2W 2.2K	
R514	ERDS2TJ271	CARBON 1/4W 270	
R515	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R516	LAR05272J09	W FLMPRF 5W 2.7K	
R519	ERDS2TJ123	CARBON 1/4W 12K	
R520	ERDS2TJ562	CARBON 1/4W 5.6K	
R524	ERDS2TJ223	CARBON 1/4W 22K	
R525	ERDS2TJ222	CARBON 1/4W 2.2K	

Ref. No.	Part No.	Part Name & Description	Remarks
R529	ERDS2TJ103	CARBON 1/4W 10K	
R531	ERDS2TJ223	CARBON 1/4W 22K	
R541	ERDS2TJ473	CARBON 1/4W 47K	
R542	ERDS2TJ103	CARBON 1/4W 10K	
R543	ERDS2TJ472	CARBON 1/4W 4.7K	
R545	ERDS2TJ331	CARBON 1/4W 330	
R546	ERDS2TJ103	CARBON 1/4W 10K	
R547	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R548	ERDS2TJ104	CARBON 1/4W 100K	
R552	ERDS2TJ273	CARBON 1/4W 27K	
R553	ERDS2TJ102	CARBON 1/4W 1K	
R554	ERDS2TJ123	CARBON 1/4W 12K	
R555	ERDS2TJ823	CARBON 1/4W 82K	
R556	ERDS2TJ823	CARBON 1/4W 82K	
R557	ERG2SJ331H	METAL OXIDE 2W 330	
R558	ERG2ANJ561H	METAL OXIDE 2W 560	
R559	ERDS2TJ123	CARBON 1/4W 12K	
R561	ERQ2CJP1R8S	FUSE 2W 1.8	⚠
R562	ERF2AK3R9P	W FLMPRF 2W 3.9	
R571	ERDS2TJ101	CARBON 1/4W 100	
R572	ERDS2TJ331	CARBON 1/4W 330	
R573	ERDS2TJ221	CARBON 1/4W 220	
R574	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R581	ERDS1FJ1R5P	CARBON 1/2W 1.5	⚠
R582	ERDS1FJ1R2P	CARBON 1/2W 1.2	⚠
R584	ERDS2TJ562	CARBON 1/4W 5.6K	
R585	ERDS2TJ473	CARBON 1/4W 47K	
R586	ERDS2TJ393	CARBON 1/4W 39K	
R801	ERF3AKR82	W FLMPRF 3W 0.82	⚠
R802	ERDS1FJ103P	CARBON 1/2W 10K	⚠
R802	ERDS1FPJ103	CARBON 1/2W 10K	⚠
R804	ERF15ZJ181	W FLMPRF 15W 180	
R805	ERDS2TJ104	CARBON 1/4W 100K	
R806	ERQ14AJ470P	FUSE 1/4W 47	⚠
R810	ERDS2TJ103	CARBON 1/4W 10K	
R813	ERDS2TJ104	CARBON 1/4W 100K	
R818	VRESC2TK825T	CARBON 1/2W 8.2M	⚠
R818	VRESC2TK825T	CARBON 1/2W 8.2M	⚠
R865	ERDS2TJ222	CARBON 1/4W 2.2K	
R1003	VRESE2TJ334T	CARBON 1/2W 330K	
R1004	ERG2SJ333H	METAL OXIDE 2W 33K	
R1005	ERG1SJ560P	METAL OXIDE 1W 56	
R1006	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R1007	ERDS2TJ101	CARBON 1/4W 100	
R1008	ERDS2TJ392	CARBON 1/4W 3.9K	
R1010	ERD25FJ100P	CARBON 1/4W 10	⚠
R1010	ERD25FPJ100P	CARBON 1/4W 10	⚠
R1010	VRESF4FJ100P	CARBON 1/4W 10	⚠
R1011	ERD25FJ100P	CARBON 1/4W 10	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
R1011	ERD25FPJ100P	CARBON 1/4W 10	⚠
R1011	VRESF4FJ100P	CARBON 1/4W 10	⚠
R1014	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R1015	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R1016	ERJ8GEYJ562V	MGF CHIP 1/8W 5.6K	
R1017	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1018	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R1019	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R1020	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R1022	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R1024	ERDS2T0T	CARBON 1/4W 0	
R1025	VRESE2TJ150T	CARBON 1/2W 15	
R1051	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R1052	ERDS2TJ153	CARBON 1/4W 15K	
R1053	ERDS2TJ153	CARBON 1/4W 15K	
R1057	ERDS2TJ331	CARBON 1/4W 330	
R1058	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R1070	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R1071	ERJ6GEYJ154V	MGF CHIP 1/10W 150K	
R1072	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R1073	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R1074	ERG2SJ102E	METAL OXIDE 2W 1K	
R1075	ERG2SJ102E	METAL OXIDE 2W 1K	
R1076	VLQSH02R101K	COIL 100UH	
R2601	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2602	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2603	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2604	ERDS2TJ1R0	CARBON 1/4W 1	
R2605	ERDS2TJ1R2	CARBON 1/4W 1.2	
R2606	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R3001	ERDS2TJ101	CARBON 1/4W 100	
R3006	ERDS2TJ101	CARBON 1/4W 100	
R3016	ERJ6GEYJ121V	MGF CHIP 1/10W 120	
R3017	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R3024	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R3025	ERJ6GEYJ125V	MGF CHIP 1/10W 1.2M	
R3026	ERJ6GEYJ474V	MGF CHIP 1/10W 470K	
R3028	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R3029	ERJ6GEYJ151V	MGF CHIP 1/10W 150	
R3032	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R3035	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3036	ERJ6GEYG102V	MGF CHIP 1/10W 1K	
R3037	ERJ6GEYG102V	MGF CHIP 1/10W 1K	
R3038	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R3077	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R3083	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R3084	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R3086	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R3087	ERJ6GEYJ684V	MGF CHIP 1/10W 680K	
R3091	ERJ6GEYJ750V	MGF CHIP 1/10W 75	
R3301	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R3302	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R3303	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	

Ref. No.	Part No.	Part Name & Description	Remarks
R4001	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4002	ERJ6GEYJ334V	MGF CHIP 1/10W 330K	
R4003	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R4004	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4005	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	
R4006	ERJ6GEYJ681V	MGF CHIP 1/10W 680	
R4007	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R4008	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R4009	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4010	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4011	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4012	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4014	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4015	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R4018	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4021	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4051	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R4052	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4101	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R4102	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R4103	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4171	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4172	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4173	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R4175	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4502	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4504	ERJ6GEYJ823V	MGF CHIP 1/10W 82K	
R4509	ERDS2TJ100	CARBON 1/4W 10	
R4521	ERQ1ABJP4R7S	FUSE 1W 4.7	⚠
R4523	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R4524	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R4591	ERDS2TJ681	CARBON 1/4W 680	
R4592	ERDS2TJ681	CARBON 1/4W 680	
R4593	ERDS2TJ681	CARBON 1/4W 680	
R4594	ERDS2TJ681	CARBON 1/4W 680	
R4701	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5301	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R5304	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R5305	ERJ6GEYJ224V	MGF CHIP 1/10W 220K	
R5306	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5308	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R5309	ERJ6GEYJ274V	MGF CHIP 1/10W 270K	
R5311	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5312	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5313	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5314	ERDS2TJ272	CARBON 1/4W 2.7K	
R5315	ERDS2TJ272	CARBON 1/4W 2.7K	
R5316	ERDS2TJ272	CARBON 1/4W 2.7K	
R5317	ERDS2TJ101	CARBON 1/4W 100	
R5324	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5325	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5401	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5402	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	
R5403	ERJ6GEYJ221V	MGF CHIP 1/10W 220	

Ref. No.	Part No.	Part Name & Description	Remarks
R5405	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R5406	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5501	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R5502	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	
R5503	ERDS2TJ471	CARBON 1/4W 470	
R5504	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5505	ERJ6ENF3241V	MGF CHIP 1/10W 3.24K	⚠
R5506	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R5508	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5510	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5511	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5512	ERDS2TJ151	CARBON 1/4W 150	
R5513	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5515	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R5601	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R5604	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R5611	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5612	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5614	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R5902	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R5932	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5933	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6001	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6002	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6003	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6004	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6005	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6006	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6007	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6009	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6016	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6017	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6018	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6019	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6020	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6021	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6022	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6023	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6024	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6026	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6027	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6028	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R6029	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6031	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6032	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6033	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6035	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6039	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6044	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6045	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6047	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6048	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6049	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6050	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	

Ref. No.	Part No.	Part Name & Description	Remarks
R6054	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R6055	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6056	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6057	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6060	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6061	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6062	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6063	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6064	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6065	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6067	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6068	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6070	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6071	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6072	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6073	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6075	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6086	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6088	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6089	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R6090	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R6091	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R6092	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6094	ERJ6GEYJ912V	MGF CHIP 1/10W 9.1K	
R6101	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R6102	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R6103	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R6104	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6105	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6110	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6111	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6112	ERJ6GEYJ224V	MGF CHIP 1/10W 220K	
R6113	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6114	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6115	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6116	ERDS2TJ101	CARBON 1/4W 100	
R6118	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6119	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6120	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6121	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6122	ERJ6GEYJ181V	MGF CHIP 1/10W 180	
R6123	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6124	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6125	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6126	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6127	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6130	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6131	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R6132	ERJ6GEYJ391V	MGF CHIP 1/10W 390	
R6133	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6134	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6135	ERJ6GEYJ475V	MGF CHIP 1/10W 4.7M	
R6136	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R6137	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	

Ref. No.	Part No.	Part Name & Description	Remarks
R6138	ERDS2TJ560T	CARBON 1/4W 56	
R6142	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R6143	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6144	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6146	ERJ6GEYJ912V	MGF CHIP 1/10W 9.1K	
R6147	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R6160	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6161	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6162	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6163	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6169	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6170	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6171	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6201	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6202	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6203	ERJ6GEYJ274V	MGF CHIP 1/10W 270K	
R6204	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R6205	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	
R6206	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6207	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6208	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R6209	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6210	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R6211	ERJ6GEYJ243V	MGF CHIP 1/10W 24K	
R6301	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6302	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6303	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6304	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6305	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6306	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6307	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6316	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R6401	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R7001	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7002	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7003	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7004	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7005	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R7006	ERJ6GEYJ271V	MGF CHIP 1/10W 270	
R7007	ERDS2TJ102	CARBON 1/4W 1K	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C401	ECEA1HGE2R2	ELECTROLYTIC 50V 2.2UF	
C402	ECA1CM471B	ELECTROLYTIC 16V 470UF	
C408	ECA1HGE010KB	ELECTROLYTIC 50V 1UF	
C409	ECA1VM101B	ELECTROLYTIC 35V 100UF	
C413	ECQB1H104KF	POLYESTER 50V 0.1UF	
C414	ECA1EM102E	ELECTROLYTIC 25V 1000UF	
C418	ECA1VM221B	ELECTROLYTIC 35V 220UF	
C458	ECQB1H103KM	POLYESTER 50V 0.01UF	
C501	ECQB1H473KM3	POLYESTER 50V 0.047UF	
C510	ECKR2H102KB5	CERAMIC 500V 1000PF	
C513	ECA1HM100B	ELECTROLYTIC 50V 10UF	
C524	ECKC3D821KBP	CERAMIC 2KV 82PF	⚠
C531	ECA1HM3R3B	ELECTROLYTIC 50V 3.3UF	
C541	ECA1HM100B	ELECTROLYTIC 50V 10UF	
C543	ECA1HM100B	ELECTROLYTIC 50V 10UF	
C552	ECA1EM471B	ELECTROLYTIC 25V 470UF	
C553	ECKR2H471KB5	CERAMIC 500V 470PF	
C554	ECWH15H682J4	POLYESTER 1.5KV 6800PF	⚠
C554	ECWH20682JBV	POLYESTER 2000V 6800PF	⚠
C556	ECWF2434JBB	POLYESTER 500V 0.43UF	⚠
C556	ECWF2434JSB	POLYESTER 500V 0.43UF	⚠
C556	LSCFM2434JM	POLYESTER 500V 0.33UF	⚠
C558	ECA1VM101B	ELECTROLYTIC 35V 100UF	
C560	ECA2EM100B	ELECTROLYTIC 250V 10UF	⚠
C561	ECA2CM2R2B	ELECTROLYTIC 160V 2.2UF	
C563	ECEA180V33WE	ELECTROLYTIC 180V 33UF	
C571	ECA1HM3R3B	ELECTROLYTIC 50V 3.3UF	
C572	ECA1CM221B	ELECTROLYTIC 16V 220UF	
C573	ECKR2H122KB5	CERAMIC 50V 1200PF	
C801	VCKSRNG472ZX	CERAMIC 250V 4700PF	
C802	VCKSRNG472ZX	CERAMIC 250V 4700PF	
C803	VCKSRNG472ZX	CERAMIC 250V 4700PF	
C804	VCKSRNG472ZX	CERAMIC 250V 4700PF	
C805	EC0S2PP471BB	ELECTROLYTIC 180V 470UF	⚠
C805	ECES2PU471HG	ELECTROLYTIC 180V 470UF	⚠
C806	ECEA2EU220E	ELECTROLYTIC 250V 22UF	
C806	ECA2EM220E	ELECTROLYTIC 250V 22UF	
C807	VSQ1003-F	ARRESTER	⚠
C808	ECQU2A823MLA	POLYESTER 250V 0.082UF	⚠
C808	LSCFQ2A823MC	POLYESTER 250V 0.082UF	⚠
C809	ECKATS221MB	CERAMIC 125V 220PF	⚠
C809	ECKETS221MB	CERAMIC 125V 220PF	⚠
C809	VCKSEJD221KW	CERAMIC 125V 220PF	⚠
C809	VCKSELD221KW	CERAMIC 125V 220PF	⚠
C809	VCKSHJD221KW	CERAMIC 125V 220PF	⚠
C809	VCKSHLD221KW	CERAMIC 125V 220PF	⚠
C809	VCKSTJG221KW	CERAMIC 250V 220PF	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
C809	VCKSTLG221KW	CERAMIC 250V 220PF	⚠
C809	VCKSUJD221KW	CERAMIC 125V 220PF	⚠
C809	VCKSULD221KW	CERAMIC 125V 220PF	⚠
C810	ECKATS221MB	CERAMIC 125V 220PF	⚠
C810	ECKETS221MB	CERAMIC 125V 220PF	⚠
C810	VCKSEJD221KW	CERAMIC 125V 220PF	⚠
C810	VCKSELD221KW	CERAMIC 125V 220PF	⚠
C810	VCKSHJD221KW	CERAMIC 125V 220PF	⚠
C810	VCKSHLD221KW	CERAMIC 125V 220PF	⚠
C810	VCKSTJG221KW	CERAMIC 250V 220PF	⚠
C810	VCKSTLG221KW	CERAMIC 250V 220PF	⚠
C810	VCKSUJD221KW	CERAMIC 125V 220PF	⚠
C810	VCKSULD221KW	CERAMIC 125V 220PF	⚠
C811	ECKATS472MF	CERAMIC 250V 4700PF	⚠
C812	ECKATS472MF	CERAMIC 250V 4700PF	⚠
C817	ECKATS152ME	CERAMIC 250V 1500PF	⚠
C1001	ECKATS103MF	CERAMIC 250V 0.01UF	⚠
C1001	ECKETS103MF	CERAMIC 125V 0.01UF	⚠
C1001	VCKST3G103MY	CERAMIC 250V 0.01UF	⚠
C1001	VCKSU3D103MY	C CHIP 125V 0.01UF	⚠
C1002	ECKATS332ME8	CERAMIC 250V 3300PF	⚠
C1002	ECKDNB332ME8	CERAMIC 125V 3300PF	⚠
C1002	ECKETS332ME8	CERAMIC 125V 3300PF	⚠
C1002	VCKST3G332MX	CERAMIC 250V 3300PF	⚠
C1002	VCKSU3D332MX	C CHIP 125V 3300PF	⚠
C1003	ECKATS222ME	CERAMIC 250V 2200PF	⚠
C1004	ECEA2DU121YE	ELECTROLYTIC 200V 120UF	⚠
C1004	VCESAN2D121E	ELECTROLYTIC 200V 120UF	⚠
C1004	VCESR2D121XE	ELECTROLYTIC 200V 120UF	⚠
C1005	ECA2DHG4R7B	ELECTROLYTIC 200V 4.7UF	
C1006	ECKR2H221KB5	CERAMIC 500V 220PF	
C1007	ECUV1C224KBN	C CHIP 16V 0.22UF	
C1009	VCYSBRE183KX	CERAMIC 25V 0.018UF	
C1010	ECUV1H101JCN	C CHIP 50V 100PF	
C1011	ECA1HHG4R7B	ELECTROLYTIC 50V 4.7UF	
C1012	ECEA1PEE331	ELECTROLYTIC 18V 330UF	
C1013	ECA1EM331B	ELECTROLYTIC 25V 330UF	
C1014	ECA1HHG4R7I	ELECTROLYTIC 50V 4.7UF	
C1016	ECEA1PEE331	ELECTROLYTIC 18V 330UF	
C1017	ECA0JM102B	ELECTROLYTIC 6.3V 1000UF	
C1018	ECUV1E104KBN	C CHIP 25V 0.1UF	
C1021	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C1025	ECKATS221MB	CERAMIC 125V 220PF	⚠
C1025	ECKETS221MB	CERAMIC 125V 220PF	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
C1025	VCKSEJD221KW	CERAMIC 125V 220PF	⚠
C1025	VCKSELD221KW	CERAMIC 125V 220PF	⚠
C1025	VCKSHJD221KW	CERAMIC 125V 220PF	⚠
C1025	VCKSHLD221KW	CERAMIC 125V 220PF	⚠
C1025	VCKSTJG221KW	CERAMIC 250V 220PF	⚠
C1025	VCKSTLG221KW	CERAMIC 250V 220PF	⚠
C1025	VCKSUJD221KW	CERAMIC 125V 220PF	⚠
C1025	VCKSULD221KW	CERAMIC 125V 220PF	⚠
C1029	ECUV1H101JCN	C CHIP 50V 100PF	
C1030	VCYSBRE183KX	CERAMIC 25V 0.018UF	
C1051	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C1052	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C1058	ECEA0JEE101	ELECTROLYTIC 6.3V 100UF	
C1059	ECEA1CKA220	ELECTROLYTIC 16V 22UF	
C1070	ECA1CM101B	ELECTROLYTIC 16V 100UF	
C1083	ECKATS221MB	CERAMIC 125V 220PF	⚠
C1083	ECKETS221MB	CERAMIC 125V 220PF	⚠
C1083	VCKSEJD221KW	CERAMIC 125V 220PF	⚠
C1083	VCKSELD221KW	CERAMIC 125V 220PF	⚠
C1083	VCKSHJD221KW	CERAMIC 125V 220PF	⚠
C1083	VCKSHLD221KW	CERAMIC 125V 220PF	⚠
C1083	VCKSTJG221KW	CERAMIC 250V 220PF	⚠
C1083	VCKSTLG221KW	CERAMIC 250V 220PF	⚠
C1083	VCKSUJD221KW	CERAMIC 125V 220PF	⚠
C1083	VCKSULD221KW	CERAMIC 125V 220PF	⚠
C1084	ECKATS222ME	CERAMIC 250V 2200PF	⚠
C1085	ECKATS152ME	CERAMIC 250V 1500PF	⚠
C2601	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C2602	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C2603	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C2604	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2605	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2606	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2607	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2608	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C2609	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C2610	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C2611	ECUV1H103KBN	C CHIP 50V 0.01UF	
C2612	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C2616	ECA1EM331B	ELECTROLYTIC 25V 330UF	
C3003	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3004	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3006	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3007	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3008	ECUV1H181JCN	C CHIP 50V 180PF	
C3009	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C3010	ECUV1H103ZFN	C CHIP 50V 0.01UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C3013	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C3015	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C3016	ECEA1CKS100	ELECTROLYTIC 16V 10UF	
C3019	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3020	ECEA1CKA220	ELECTROLYTIC 16V 22UF	
C3021	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3022	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C3023	ECUV1H680JCN	C CHIP 50V 68PF	
C3024	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3025	ECUV1E104KBN	C CHIP 25V 0.1UF	
C3026	ECUV1H822KBN	C CHIP 50V 8200PF	
C3027	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3030	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3031	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3032	ECUV1C474ZFN	C CHIP 16V 0.47UF	
C3034	ECUV1H181JCN	C CHIP 50V 180PF	
C3035	ECUV1H330JCN	C CHIP 50V 33PF	
C3036	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3038	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C3041	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3043	ECUV1H392KBN	C CHIP 50V 3900PF	
C3044	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3045	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C3046	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3047	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3048	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3050	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3053	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3055	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3056	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3057	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3058	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3060	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C3081	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
C3082	ECUV1H332KBN	C CHIP 50V 3300PF	
C3231	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C3232	ECUV1H102KBN	C CHIP 50V 1000PF	
C3234	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C3235	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3236	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3237	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3301	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3302	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C4001	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C4002	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4003	ECUV1H272KBN	C CHIP 50V 2700PF	
C4004	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4005	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C4006	ECUV1H102KBN	C CHIP 50V 1000PF	
C4007	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C4008	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C4009	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4010	ECUV1E333KBN	C CHIP 25V 0.033UF	
C4011	ECUV1H103KBN	C CHIP 50V 0.01UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C4012	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4013	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C4014	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4018	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4020	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4051	ECUV1E333KBN	C CHIP 25V 0.033UF	
C4102	ECQB1562JF3	POLYESTER 100V 5600PF	
C4103	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4104	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4105	ECEA1CKA220	ELECTROLYTIC 16V 22UF	
C4171	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4502	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4504	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C4506	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C4508	ECA1CM221B	ELECTROLYTIC 16V 220UF	
C4509	ECUV1E473KBN	C CHIP 25V 0.047UF	
C4521	ECA1EM102B	ELECTROLYTIC 25V 1000UF	
C4524	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C5301	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C5302	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C5303	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C5305	ECEA1HKAR33	ELECTROLYTIC 50V 0.33UF	
C5306	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C5307	ECEA1CKN100	ELECTROLYTIC 16V 10UF	
C5308	ECEA1CKN100	ELECTROLYTIC 16V 10UF	
C5401	VCUSTBC224KB	C CHIP 16V 0.22UF	
C5402	ECUV1H222KBN	C CHIP 50V 2200PF	
C5403	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C5501	ECUV1E183KBN	C CHIP 25V 0.018UF	
C5502	ECUV1H681KBN	C CHIP 50V 680PF	
C5505	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C5506	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C5507	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C5508	ECUV1H221JSN	C CHIP 50V 220PF	
C5510	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C5511	ECUV1E333KBN	C CHIP 25V 0.033UF	
C5516	ECUV1E333KBN	C CHIP 25V 0.033UF	
C5601	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C5602	ECUV1E104KBN	C CHIP 25V 0.1UF	
C5603	ECUV1H150JCN	C CHIP 50V 15PF	
C5604	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C5605	ECUV1E153KBN	C CHIP 25V 0.015UF	
C5902	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C5903	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C5904	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C5905	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C5906	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C5932	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C6001	ECEA0JKA331	ELECTROLYTIC 6.3V 330UF	
C6002	ECUV1H080CCN	C CHIP 50V 8PF	
C6003	ECUV1H100CCN	C CHIP 50V 10PF	
C6004	ECUV1E104KBN	C CHIP 25V 0.1UF	
C6006	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C6009	ECEA1CKS100	ELECTROLYTIC 16V 10UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C6011	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C6013	ECUV1H101JCN	C CHIP 50V 100PF	
C6017	ECUV1H101JCN	C CHIP 50V 100PF	
C6018	ECUV1H101JCN	C CHIP 50V 100PF	
C6020	ECUV1E104KBN	C CHIP 25V 0.1UF	
C6021	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C6023	ECUV1H103KBN	C CHIP 50V 0.01UF	
C6025	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C6029	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C6040	ECUV1H102KBN	C CHIP 50V 1000PF	
C6041	ECUV1H102KBN	C CHIP 50V 1000PF	
C6044	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6203	ECUV1H332KBN	C CHIP 50V 3300PF	
C6204	ECUV1H103KBN	C CHIP 50V 0.01UF	
C6205	ECUV1H330JCN	C CHIP 50V 33PF	
C6207	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C6208	ECEA1CKS100	ELECTROLYTIC 16V 10UF	
C6209	ECUV1H102KBN	C CHIP 50V 1000PF	
C6211	ECUV1E104KBN	C CHIP 25V 0.1UF	
C6212	ECUV1E104KBN	C CHIP 25V 0.1UF	
C6213	ECEA0JKS331I	ELECTROLYTIC 6.3V 330UF	
C6214	ECEA0JKS220	ELECTROLYTIC 6.3V 22UF	
C6215	ECUV1H272KBN	C CHIP 50V 2700PF	
C6216	ECUV1H103KBN	C CHIP 50V 0.01UF	
C6220	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C6221	ECEA0JKA221	ELECTROLYTIC 6.3V 220UF	
C6302	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C6401	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C6402	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C6403	ECUV1A105KBN	C CHIP 10V 1UF	
C6404	ECUV1H121JCN	C CHIP 50V 120PF	
C6406	ECEA1HKS010	ELECTROLYTIC 50V 1UF	
C6408	ECUV1H222KBN	C CHIP 50V 2200PF	
C6410	ECUV1H103KBN	C CHIP 50V 0.01UF	
C7002	ECUV1H102KBN	C CHIP 50V 1000PF	
C7006	ECA0JM102B	ELECTROLYTIC 6.3V 1000UF	
C7007	ECUV1H102KBN	C CHIP 50V 1000PF	
C7008	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C7010	ECEA1CKA100	ELECTROLYTIC 16V 10UF	

FILTERS

Ref. No.	Part No.	Part Name & Description	Remarks
FL4051	VLFS0014	FILTER	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L501	ELH5L423	COIL	⚠
L501	ELH5L4108	COIL	⚠
L501	LLH2601T	COIL	⚠
L552	VLPS0113	FERRITE BEAD	
L553	VLQSW07D220M	COIL 22UH	
L803	ELF18D650C	COIL 8.2MH	⚠
L803	ELF21V018A	LINE NOISE FILTER	⚠
L803	LLN63021A	LINE FILTER 1.7A 8.2MH	⚠
L803	LLN63055A	COIL	⚠
L1001	ELF15N005A	LINE FILTER 0.5A 18MH	⚠
L1001	LSLQ0287	LINE FILTER 0.5A 18MH	⚠
L1001	VLQS0166	LINE FILTER 0.5A 18MH	⚠
L1001	VLQS0167	LINE FILTER 0.5A 18MH	⚠
L1001	VLQS0170	LINE FILTER 0.6A 18MH	⚠
L1002	VLQSAB7D220K	COIL 22UH	
L1003	VLQSAB7D100K	COIL 10UH	
L1006	VLPS0083	FILTER	
L3001	VLQSH02R390K	COIL 39UH	
L3002	ELESN101KA	COIL 100UH	
L3005	VLQSH02R330K	COIL 33UH	
L3010	ELESN470KA	COIL 47UH	
L3231	ELESN221KA	COIL 220UH	
L4001	VLQSU06R153K	COIL 15MH	
L4002	ELESN101KA	COIL 100UH	
L4004	VLQSH02R220K	COIL 22UF	
L4101	ELESN471KA	COIL 470UH	
L5901	ELESN101KA	COIL 100UH	
L5902	ELESN470KA	COIL 47UH	
L6201	ELEXT101KE04	COIL 100UH	
L6401	ELEXT101KE04	COIL 100UH	
L6402	VLPS0111	CHIP BEAD INDUCTOR	
L6403	VLPS0111	CHIP BEAD INDUCTOR	
L6404	VLPS0111	CHIP BEAD INDUCTOR	
L6405	VLPS0111	CHIP BEAD INDUCTOR	
L7002	ELESN100KA	COIL 10UH	

CRYSTAL OSCILLATOR

Ref. No.	Part No.	Part Name & Description	Remarks
X5501	CSB503F38	CRYSTAL OSCILLATOR	
X5601	VSXS0190-TB	CRYSTAL OSCILLATOR	
X6001	VSXS0784	CRYSTAL OSCILLATOR	

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P801	VEKS5808	CONNECTOR CABLE W/PLUG,200V	
P803	VLPS0303	CONNECTOR 2P	
P3001	VJPS0882	CONNECTOR 12P	
P4001	VJSS0888	FE CONNECTOR 2P	
P4591	VJPS0268	CONNECTOR 2P	
P6001	VJPS0275	CONNECTOR 5P	
P6201	LSJP0089	CONNECTOR 12P	
P6202	LSJP0088	CONNECTOR 12P	

SWITCHES

Ref. No.	Part No.	Part Name & Description	Remarks
SW6001	LSSH0002	LEAF SWITCH-SAFETY TAB	<R>
SW6002	LSSS0008	MODE SWITCH	<R>
SW6301	EVQ21405R	PUSH SWITCH	
SW6302	EVQ21405R	PUSH SWITCH	
SW6303	EVQ21405R	PUSH SWITCH	
SW6304	EVQ21405R	PUSH SWITCH	
SW6305	EVQ21405R	PUSH SWITCH	
SW6306	EVQ21405R	PUSH SWITCH	
SW6307	EVQ21405R	PUSH SWITCH	
SW6308	EVQ21405R	PUSH SWITCH	
SW6309	EVQ21405R	PUSH SWITCH	
SW6310	EVQ21405R	PUSH SWITCH	
SW6311	EVQ21405R	PUSH SWITCH	

FUSE& PROTECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
F801	XBA1C40NU100	FUSE 125V 4A	⚠ <R>
F801	VSFS0003A40	FUSE 4A	⚠ <R>
F1001	VSFS0003A16	FUSE 125V 1.6A	⚠ <R>
F1001	VSFS0032B16	FUSE 125V 1.6A	⚠ <R>
F1001	XBA1C16NU100	FUSE 125V 1.6A	⚠ <R>
PR1001	UNH000600A	IC PROTECTOR 1.5A	⚠ <R>
PR1001	ICP-N38-TP1	IC PROTECTOR 1.5A	⚠ <R>
PR1001	LSSF009A25E	IC PROTECTOR 1.5A	⚠ <R>
PR1002	UNH000600A	IC PROTECTOR 1.5A	⚠ <R>
PR1002	ICP-N38-TP1	IC PROTECTOR 1.5A	⚠ <R>
PR1002	LSSF009A25E	IC PROTECTOR 1.5A	⚠ <R>

RELAY

Ref. No.	Part No.	Part Name & Description	Remarks
RL801	TSEH0019	RELAY	⚠ <R>
RL801	LSSY0004	RELAY	⚠ <R>
RL801	TSEH0005	RELAY,120V	⚠ <R>
RL801	TSEH8007	RELAY,120V	⚠ <R>
RL801	TSE1860-1	RELAY,120V	⚠ <R>

TRANSFORMER

Ref. No.	Part No.	Part Name & Description	Remarks
T501	ETH09K13AZ	TRANSFORMER	<R>
T502	ETE16Z37AY	TRANSFORMER	⚠ <R>
T551	KFT3AB339F	TRANSFORMER	⚠ <R>
T1001	LSTP0105-1	TRANSFORMER	⚠ <R>
T1001	ETS28AD2J3AC	TRANSFORMER	⚠ <R>
T1001	ETS28AD2J3NC	TRANSFORMER	⚠ <R>
T1001	LSTP0105	TRANSFORMER	⚠ <R>
T1001	VTPS0041	TRANSFORMER	⚠ <R>
T1001	VTPS0041-1	TRANSFORMER	⚠ <R>
T1001	VTPS0042	TRANSFORMER	⚠ <R>
T1001	VTPS0042-1	TRANSFORMER	⚠ <R>
T4101	VLTS0304-1	TRANSFORMER	<R>

JACKS

Ref. No.	Part No.	Part Name & Description	Remarks
JK4591	LJP28016A	FRONT AUDIO/VIDEO JACK SOCKET	
JK4701	LJP68005A	EARPHONE JACK SOCKET	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
244	TUX77809	CLAMPER	
458	XTV3+8J	TAPPING SCREW,STEEL	
483	XYN3+F10S	SCREW W/WASHER,STEEL	
484	XTW3+10J	TAPPING SCREW,STEEL	
487	XYN3+J8	SCREW W/WASHER,STEEL	
488	XYN3+F6S	SCREW W/WASHER,STEEL	
711	PNA4611M00HC	INFRARED RECEIVER UNIT	<R>
719	VMFS0136	SHEET,NYLON-RAYON	
743	ENG36706G	TUNER,UHF/VHF NR	
751	LML69001A	ANODE LEAD CLAMPER	
767	TUC77626	HEAT SINK	
768	TUC77603-1	HEAT SINK	
769	LUS23005B	HEAT SINK	
771	EYF52BC	FUSE HOLDER	

12.3.3. CAPSTAN STATOR C.B.A. NR

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC2501	AN3846SC	IC, LINEAR	<R>

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R2501	ERJ8GEYJ1R0Z	MGF CHIP 1/8W 1	
R2502	ERJ8GEYJ1R0Z	MGF CHIP 1/8W 1	
R2505	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C2504	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C2506	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C2507	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C2508	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2509	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2510	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2511	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C2517	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2519	ECUV1H102KBN	C CHIP 50V 1000PF	
C2520	ECUV1C225ZFN	C CHIP 16V 2.2UF	
C2521	ECUV1C225ZFN	C CHIP 16V 2.2UF	
C2522	ECUV1C225ZFN	C CHIP 16V 2.2UF	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
491	XYN2+J7	SCREW W/WASHER,STEEL	
731(IC2505)	EZMPS300F12	MR HEAD	<R>
732(P2502)	LSJS0097	CONNECOR 12P	
733	LSMA0384	BACK PLATE,STEEL	

12.3.4. HEAD AMP C.B.A.

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC3501	AN3361SB	IC, LINEAR HEAD AMP	<R>

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R3501	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R3502	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3503	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3504	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3505	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3506	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R3507	ERJ6GEYJ561V	MGF CHIP 1/10W 560	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C3504	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3505	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C3506	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3507	ECUV1H102KBN	C CHIP 50V 1000PF	
C3508	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3511	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3512	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3513	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3519	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3520	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3523	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3524	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3528	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3529	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3532	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3533	ECUV1H103ZFN	C CHIP 50V 0.01UF	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L3501	ELESN101KA	COIL 100UH	

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P2601	LSJS0096	CONNECTOR 12P	
P3501	VJSS0883	CONNECTOR 12P	
P4091	LSJWM6N085AA	CONNECTOR CABLE W/OUT PLUG,48V	

12.3.5. CRT C.B.A.

(Model: A)

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q351	2SC1473-QNC	TRANSISTOR SI NPN	
Q351	2SC1473A(Q)	TRANSISTOR SI NPN	
Q351	2SC2482-TPE6	TRANSISTOR SI NPN	
Q351	2SC4015-NTV2	TRANSISTOR SI NPN	
Q352	2SC1473-QNC	TRANSISTOR SI NPN	
Q352	2SC1473A(Q)	TRANSISTOR SI NPN	
Q352	2SC2482-TPE6	TRANSISTOR SI NPN	
Q352	2SC4015-NTV2	TRANSISTOR SI NPN	
Q353	2SC1473-QNC	TRANSISTOR SI NPN	
Q353	2SC1473A(Q)	TRANSISTOR SI NPN	
Q353	2SC2482-TPE6	TRANSISTOR SI NPN	
Q353	2SC4015-NTV2	TRANSISTOR SI NPN	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R351	ERG1ANJ153H	METAL OXIDE 1W 15K	
R352	ERG1ANJ153H	METAL OXIDE 1W 15K	
R353	ERG1ANJ153H	METAL OXIDE 1W 15K	
R354	ERD25TJ272	CARBON 1/4W 2.7K	
R356	ERD25TJ272	CARBON 1/4W 2.7K	
R357	ERDS2TJ392	CARBON 1/4W 3.9K	
R358	ERDS2TJ392	CARBON 1/4W 3.9K	
R359	ERDS2TJ392	CARBON 1/4W 3.9K	
R360	ERDS2TJ391	CARBON 1/4W 390	
R361	ERDS2TJ391	CARBON 1/4W 390	
R362	ERDS2TJ391	CARBON 1/4W 390	
R363	ERDS2TJ181T	CARBON 1/4W 180	
R364	ERDS2TJ181T	CARBON 1/4W 180	
R365	ERDS2TJ181T	CARBON 1/4W 180	
R366	ERD25TJ272	CARBON 1/4W 2.7K	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C351	VCYSARH391KB	CERAMIC 50V 390PF	
C352	VCYSARH391KB	CERAMIC 50V 390PF	
C353	VCYSARH471KB	CERAMIC 50V 470PF	
C354	VCKSKZM102KB	CERAMIC 2KV 1000PF	

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P351	VJWS4MS330BB	CONNECTOR CABLE W/OUT PLUG,12V	<R>
P352	VJWS4NS265BB	CONNECTOR CABLE W/OUT PLUG,180V	<R>
P353	VJSS3333	1P SOCKET	
P355	LJP65001A	CRT SOCKET	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
153	TMM7443-1	CLAMPER	

12.3.6. CRT C.B.A.

(Model: B)

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q351	2SC3063	TRANSISTOR SI NPN	
Q351	2SC3271F-N	TRANSISTOR SI NPN	
Q351	2SC3619	TRANSISTOR SI NPN	
Q352	2SC3063	TRANSISTOR SI NPN	
Q352	2SC3271F-N	TRANSISTOR SI NPN	
Q352	2SC3619	TRANSISTOR SI NPN	
Q353	2SC3063	TRANSISTOR SI NPN	
Q353	2SC3271F-N	TRANSISTOR SI NPN	
Q353	2SC3619	TRANSISTOR SI NPN	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R351	ERG2ANJ153H	METAL OXIDE 2W 15K	
R352	ERG2ANJ153H	METAL OXIDE 2W 15K	
R353	ERG2ANJ153H	METAL OXIDE 2W 15K	
R354	ERD25TJ272	CARBON 1/4W 2.7K	
R355	ERD25TJ272	CARBON 1/4W 2.7K	
R356	ERD25TJ272	CARBON 1/4W 2.7K	
R357	ERDS2TJ392	CARBON 1/4W 3.9K	
R358	ERDS2TJ392	CARBON 1/4W 3.9K	
R359	ERDS2TJ392	CARBON 1/4W 3.9K	
R360	ERDS2TJ391	CARBON 1/4W 390	
R361	ERDS2TJ391	CARBON 1/4W 390	
R362	ERDS2TJ391	CARBON 1/4W 390	
R363	ERDS2TJ121	CARBON 1/4W 120	
R364	ERDS2TJ121	CARBON 1/4W 120	
R365	ERDS2TJ121	CARBON 1/4W 120	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C351	VCYSARH471KB	CERAMIC 50V 470PF	
C352	VCYSARH471KB	CERAMIC 50V 470PF	
C353	VCYSARH561KB	CERAMIC 50V 560PF	
C354	VCKSKZM102KB	CERAMIC 2KV 1000PF	

PIN HEADERS

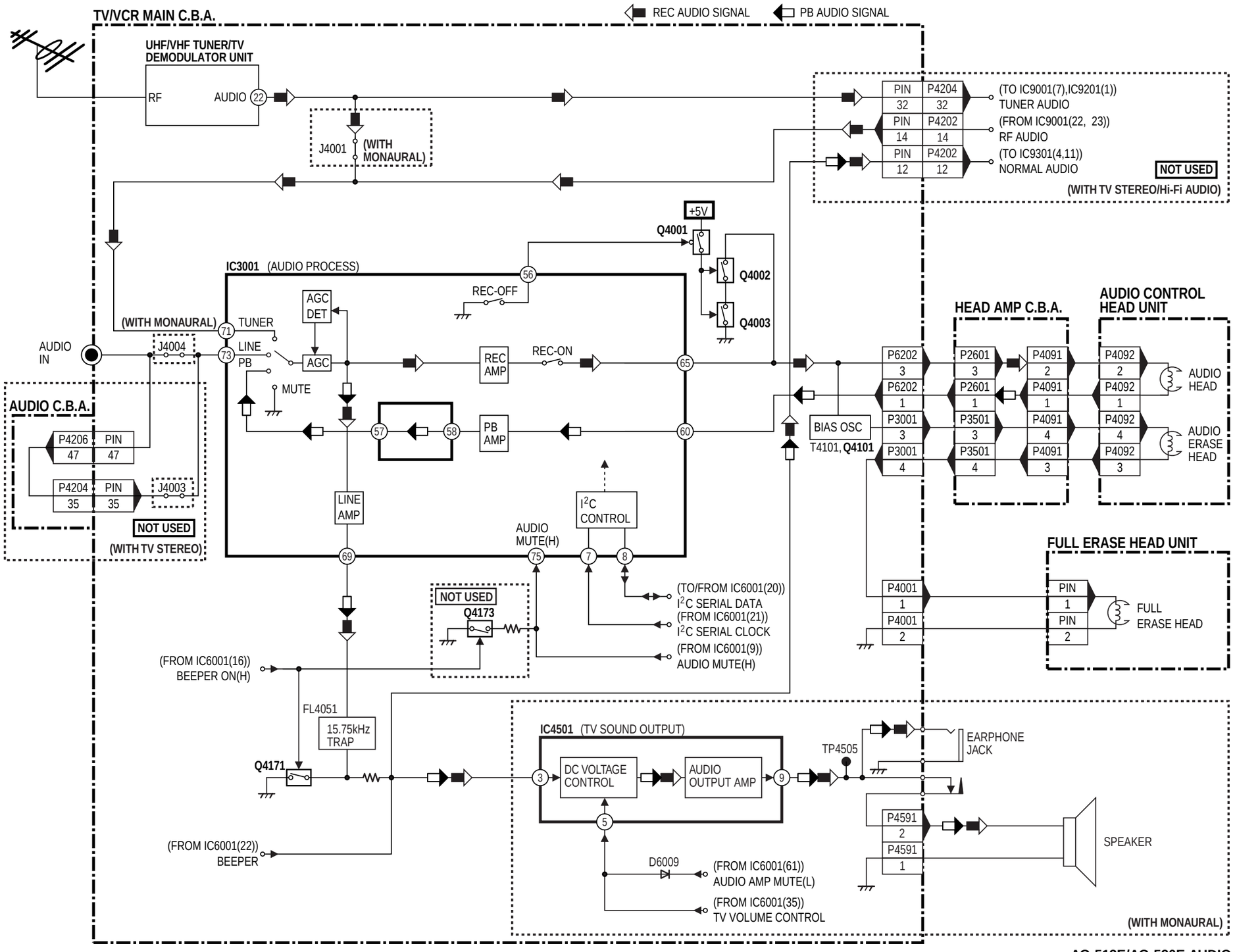
Ref. No.	Part No.	Part Name & Description	Remarks
P351	VJWS4MS410BB	CONNECTOR CABLE W/OUT PLUG,12V	<R>
P352	VJWS4NS370BB	CONNECTOR CABLE W/OUT PLUG,180V	<R>
P353	LJP25007A	CRT SOCKET	
P357	VJSS3333	1P SOCKET	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
153	TMM7443-1	CLAMPER	

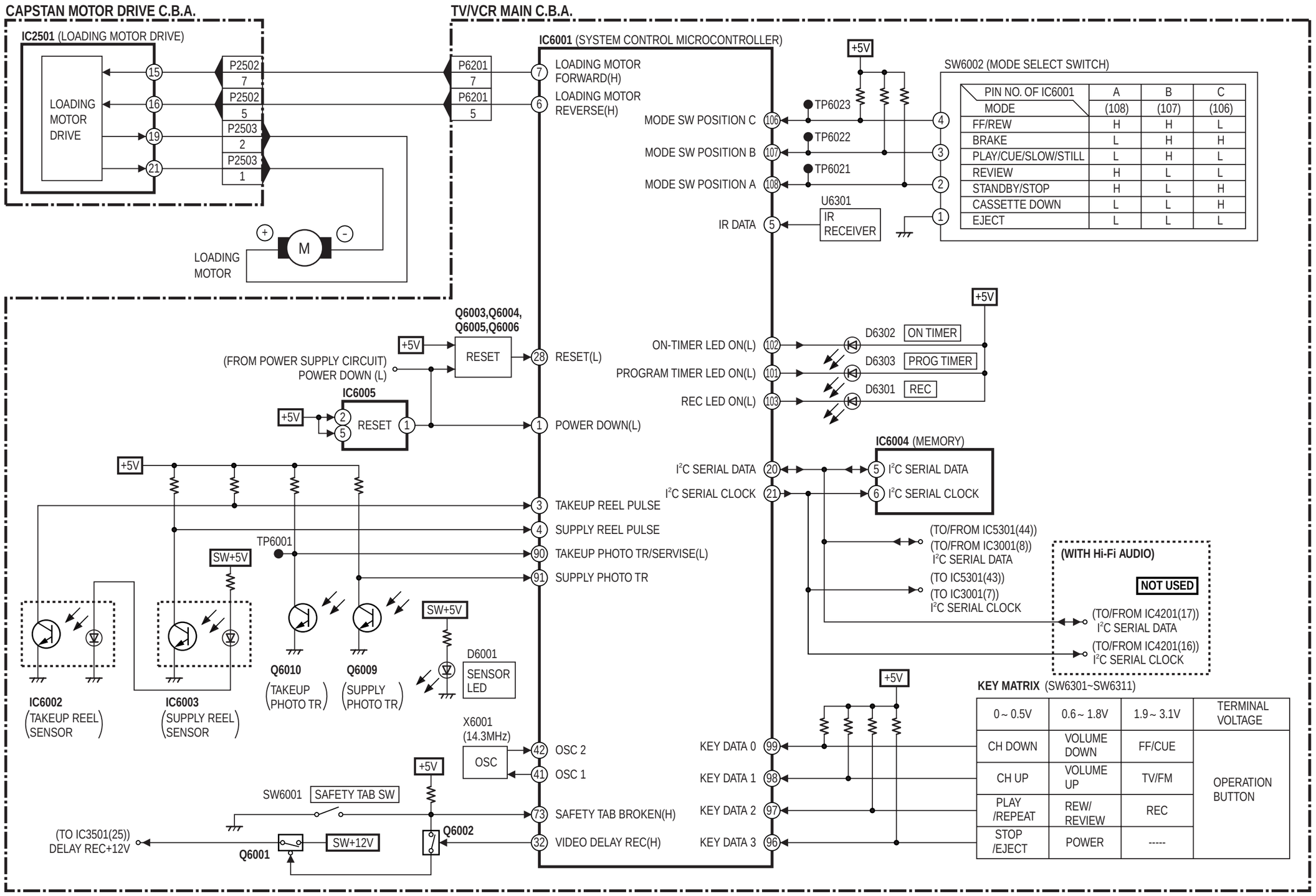
13. SCHEMATIC DIAGRAMS FOR PRINTING WITH LETTER SIZE

AUDIO SIGNAL PATH BLOCK DIAGRAM



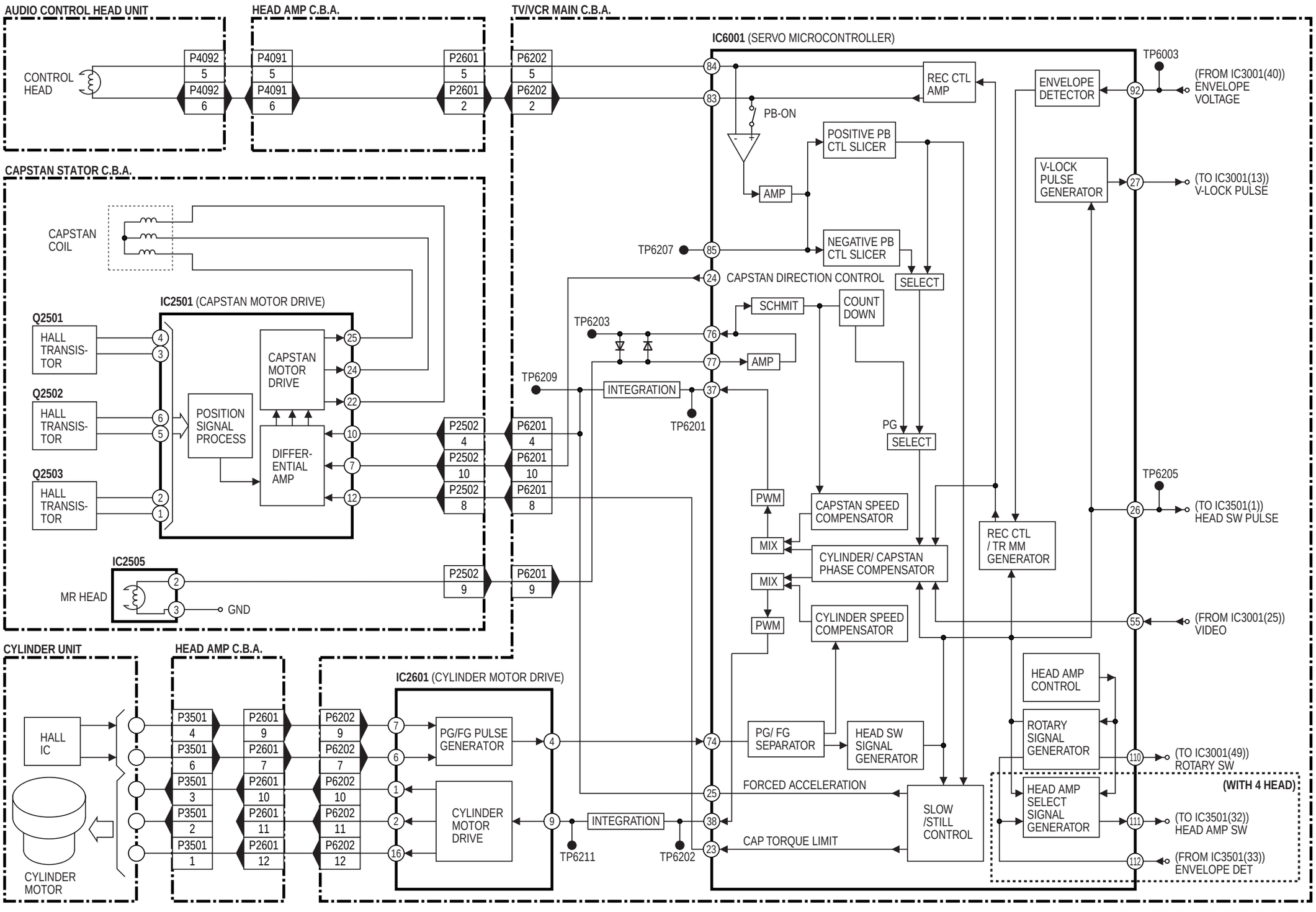
AG-513E/AG-520E AUDIO SIGNAL PATH BLOCK DIAGRAM

SYSTEM CONTROL BLOCK DIAGRAM



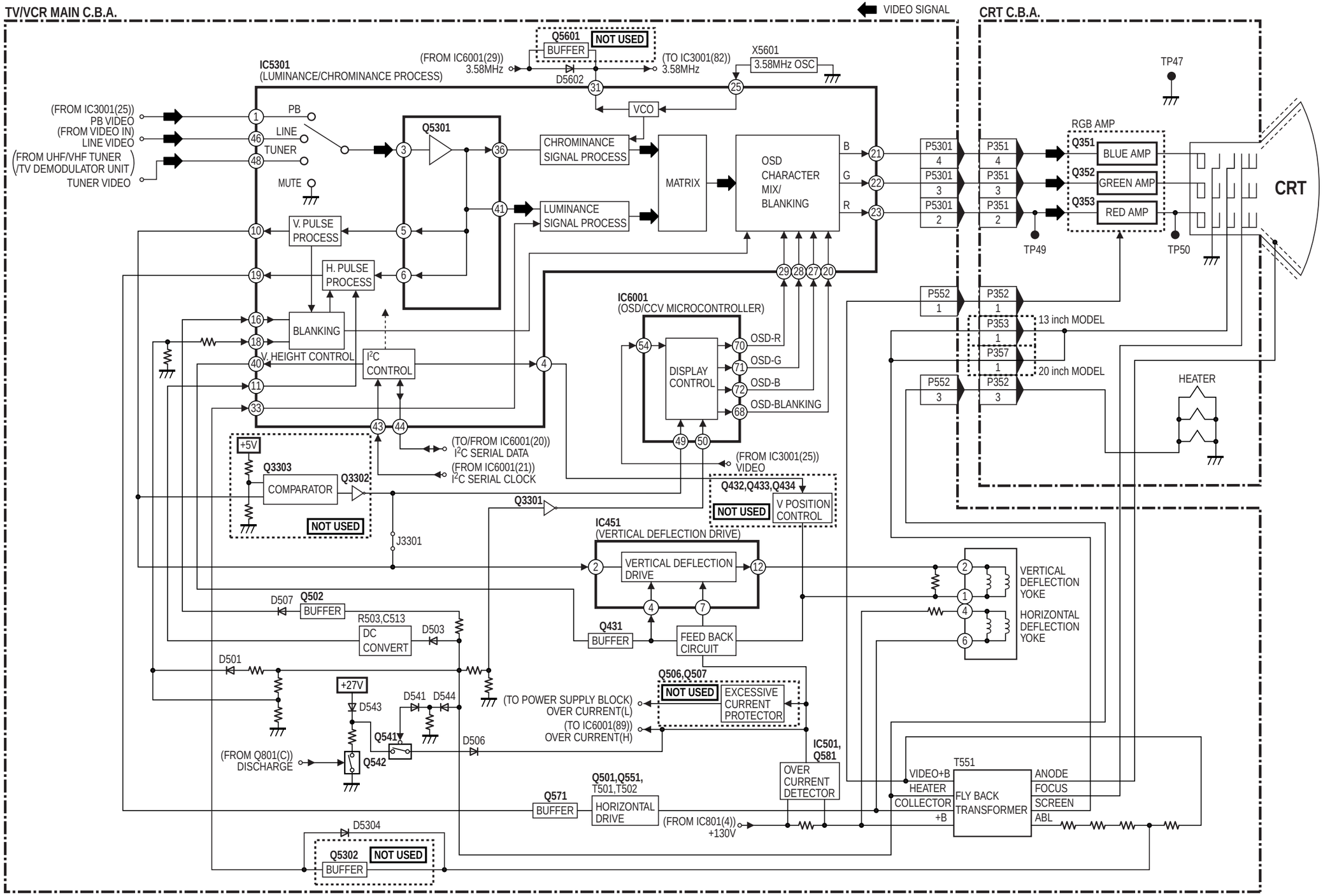
AG-513E/AG-520E SYSTEM CONTROL BLOCK DIAGRAM

SERVO BLOCK DIAGRAM



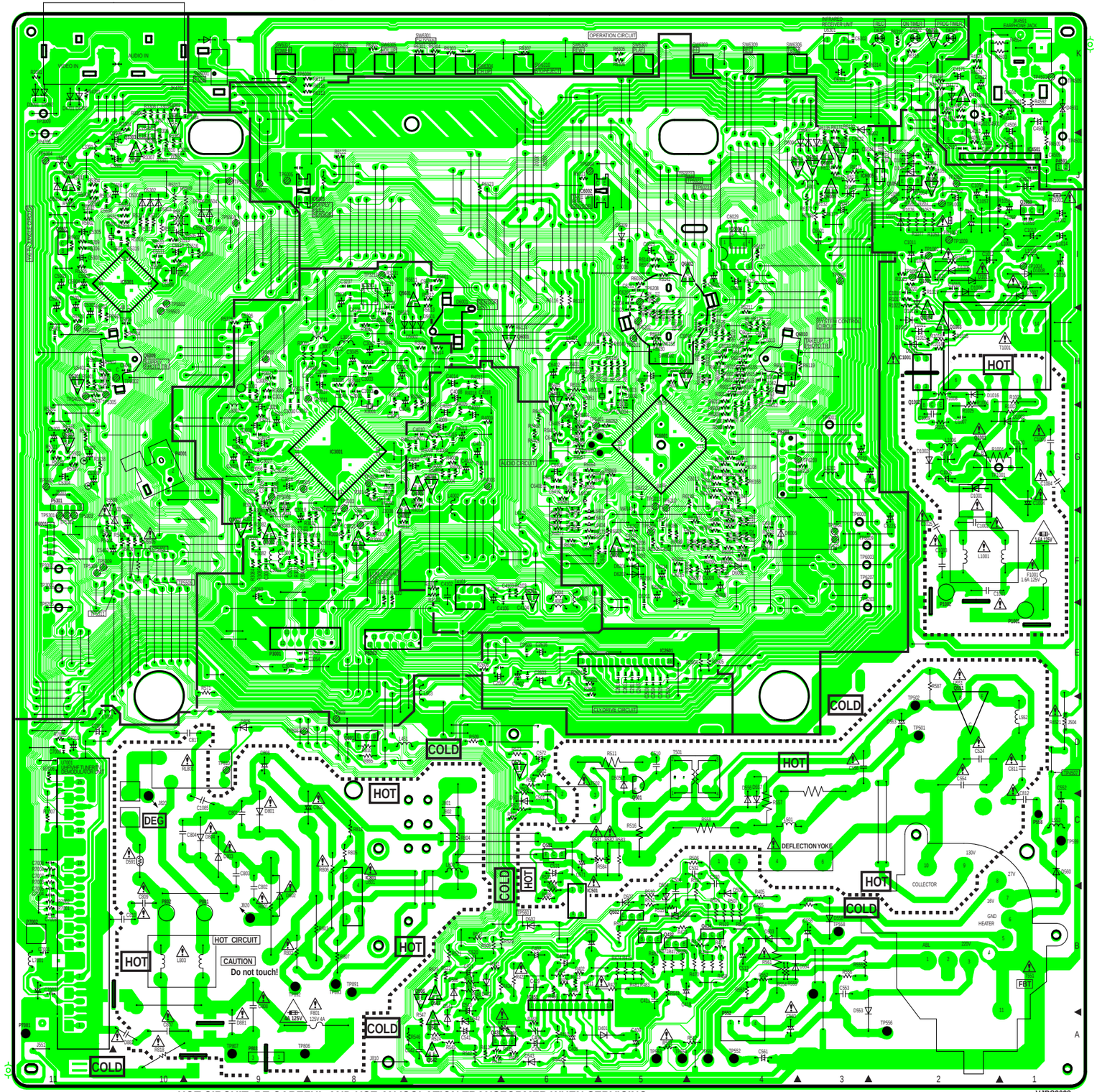
AG-513E/AG-520E SERVO BLOCK DIAGRAM

TV / Y/C PROCESS BLOCK DIAGRAM



AG-513E/AG-520E TV/Y/C PROCESS BLOCK DIAGRAM

TV/VCR MAIN C.B.A. VEPS3098D (A)



HOT CIRCUIT. BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE 4A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÉME TYPE 4A 125V

4A 125V

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'T INCENDIE N'I UTILISERQUE DES FUSIBLE DE MÉME TYPE 1.6A 125V

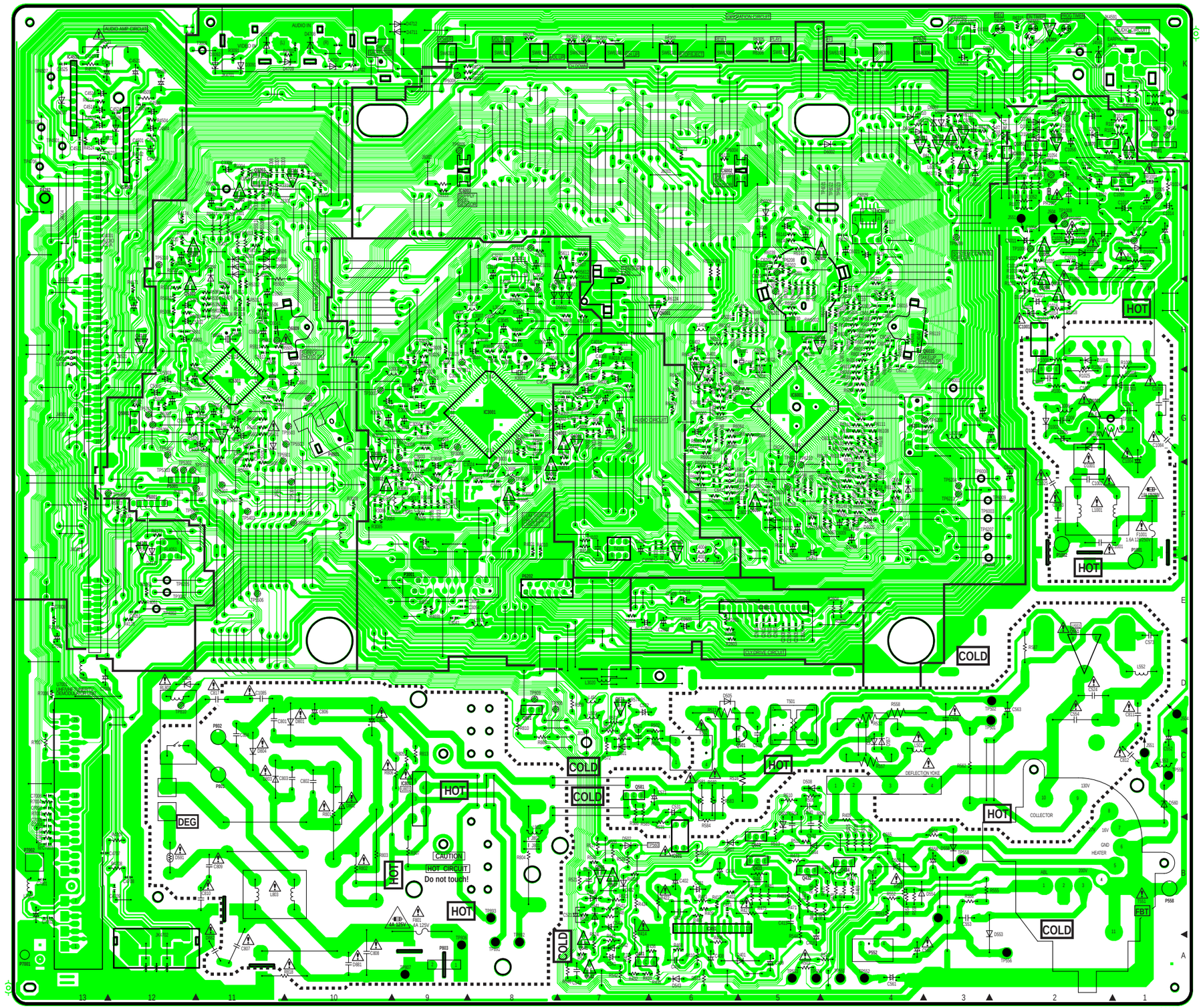
1.6A 125V

NOTE:
CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS. FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING, PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.

AG-513E
TV/VCR MAIN C.B.A.
VEPS3098D

TV/VCR MAIN C.B.A. VEPS3096G (B)



HOT CIRCUIT. BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 4A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÉME
TYPE 4A 125V

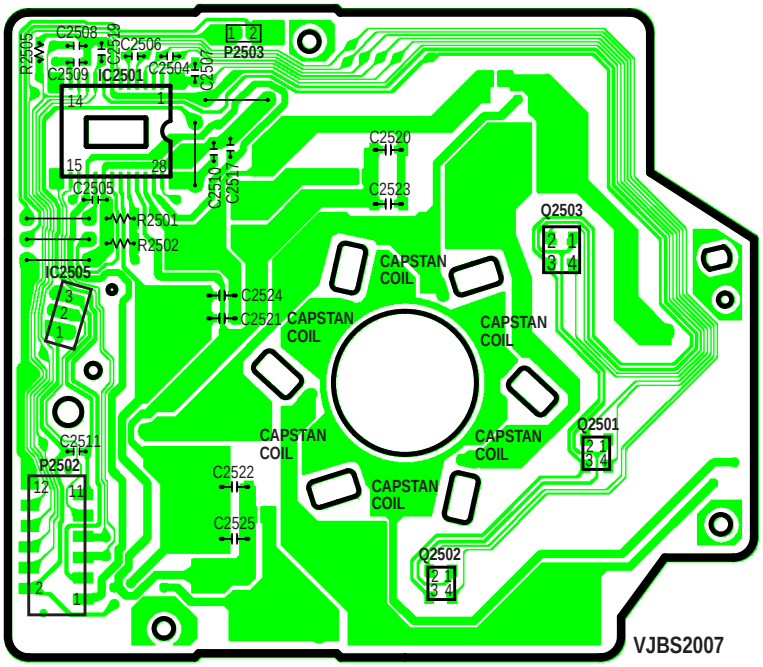
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'T INCENDIE N'I UTILISERQUE DES FUSIBLE DE MÉME
TYPE 1.6A 125V

NOTE:
CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS.
FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING,
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.

AG-520E
TV/VCR MAIN C.B.A.
VEPS3096G

CAPSTAN STATOR C.B.A. VEMS0342



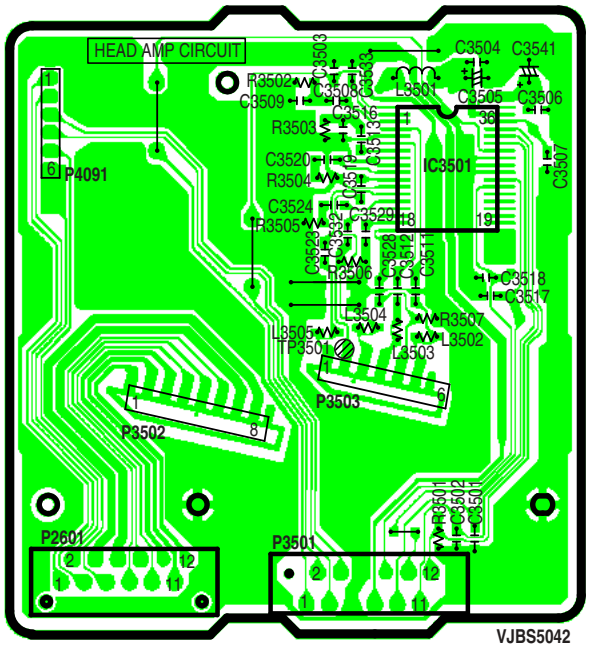
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
WHEN INSTALLING THE IC2501(AN3846SC) OR CAPSTAN STATOR C.B.A.,
BE SURE TO APPLY SILICON GREASE(VFK1301). REFER TO "CAPSTAN STATOR C.B.A."
OF MACHANISM SECTION IN DISASSEMBLY/ASSEMBLY PROCEDURES.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

NOTE:
THE FOLLOWING PARTS ON THE CAPSTAN STATOR C.B.A. ARE NOT SUPPLIED SEPARATELY.
PLEASE ORDER AND REPLACE WITH THE CIRCUIT BOARD ASSEMBLY INSTEAD OF INDIVIDUAL PARTS.
(Q2501, Q2502, Q2503, CAPSTAN COIL)

HEAD AMP C.B.A. VEPS5042A



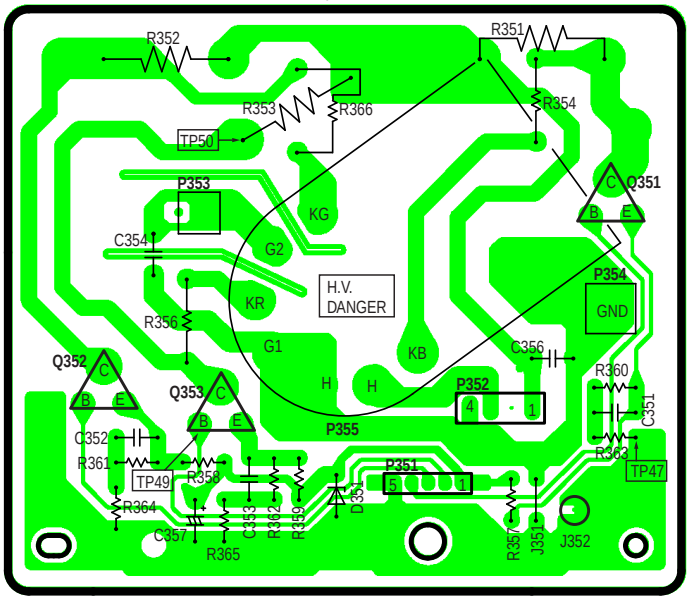
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS.
FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING,
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.

CRT C.B.A. LRP63004C (A)

CAUTION: WHEN SERVICING THIS C.B.A., AVOID TOUCHING HIGH VOLTAGE COMPONENTS.



LRP63004

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS.
FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING,
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.

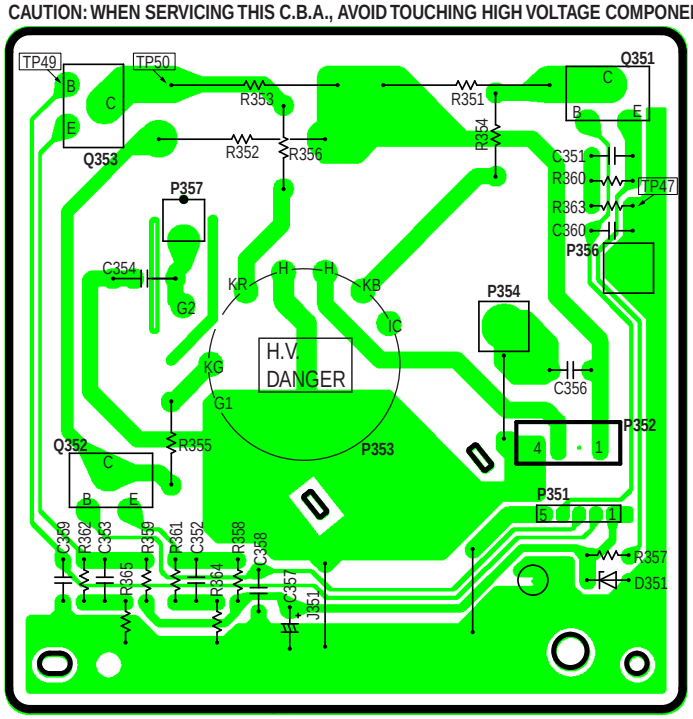
NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B

CRT C.B.A. LRP63022A (B)

CAUTION: WHEN SERVICING THIS C.B.A., AVOID TOUCHING HIGH VOLTAGE COMPONENTS.



LRP63022

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS.
FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING,
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B

1. **Important safety notice**
   Components identified by the sign ⚠ have special characteristics important for safety. When replacing any of these components. Use only the specified parts.

2. Do not use the part number shown on this drawing for ordering.
   The correct part number and part value is shown in the parts list, and may be slightly different or amended since this drawing was prepared.

3. Use only original replacement parts:
   To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Parts different in shape or size may be used.
   However, only interchangeable parts will be supplied as service replacement parts.

5. Test point information
   ⏀ :Test point with a jumper wire across a hole in P.C.B.
   ▭→ :Test point with a component lead on the foil side.
   ⊘ :Test point with no test pin.
   ● :Test point with a test pin.

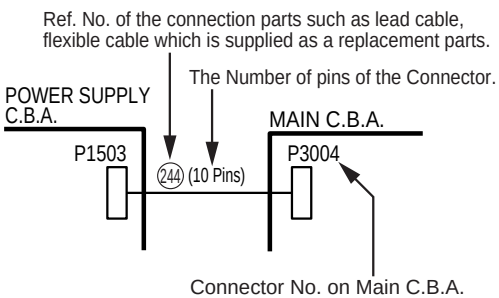
Schematic Diagram Notes

1. Indication for Zener Voltage of Zener Diodes
   The Zener Voltage of Zener Diodes are indicated as such on Schematic Diagrams.

   Example:
   (6.2V).....Zener Voltage

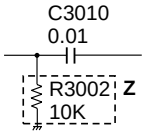
2. How to identify Connectors
   Each connector is labeled with a Connector No. and Pin No. Indicating what it is connected to,
   in other words, its counter part.
   Use the interconnection schematic diagram to find the connection between associated connectors.

   Example:
   The connections between C.B.A.s are shown below.


Ref. No. of the connection parts such as lead cable, flexible cable which is supplied as a replacement parts.
The Number of pins of the Connector.
POWER SUPPLY C.B.A.
MAIN C.B.A.
P1503
244 (10 Pins)
P3004
Connector No. on Main C.B.A.

3. Parts enclosed in dashed lines marked "Z" are not used in any models included in this service manual.

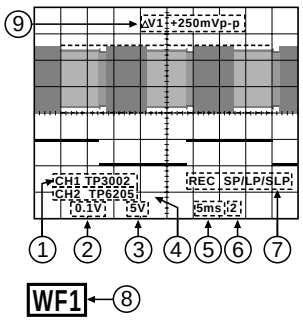
   Example:



4. The part number shown on this drawing is only main part number, except for safety parts. Be sure to make your orders of replacement parts according to the parts list.

Signal Waveform Note

How to read Signal Waveform



① Connecting Point
② Volts/Div
③ Volts/Div
④ Connecting Point
⑤ Time/Div
⑥ Trigger Channel of the scope
(1:CH1,2:CH2)
⑦ Operation Mode of VCR
⑧ Waveform Point on Schematic
⑨ ΔV1:Peak to Peak

Voltage Chart Note

Voltage Measurement
a. Color bar signal in SP mode.
b. ---:Unmeasurable or not necessary to measure.

Circuit Board Layout Note

Circuit Board Layout shows components installed for various models.
For proper parts content for the model you are servicing, please refer to the schematic diagram and parts list.

NOTE:
Circuit Board Layout includes components which are not used.

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

Note : Refer to item 3 of Schematic Diagram Notes for mark "Z".

TV/VCR MAIN I (SYSTEM CONTROL/SERVO/CCV/OSD/OPERATION/CYLINDER DRIVE) SCHEMATIC DIAGRAM (A)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

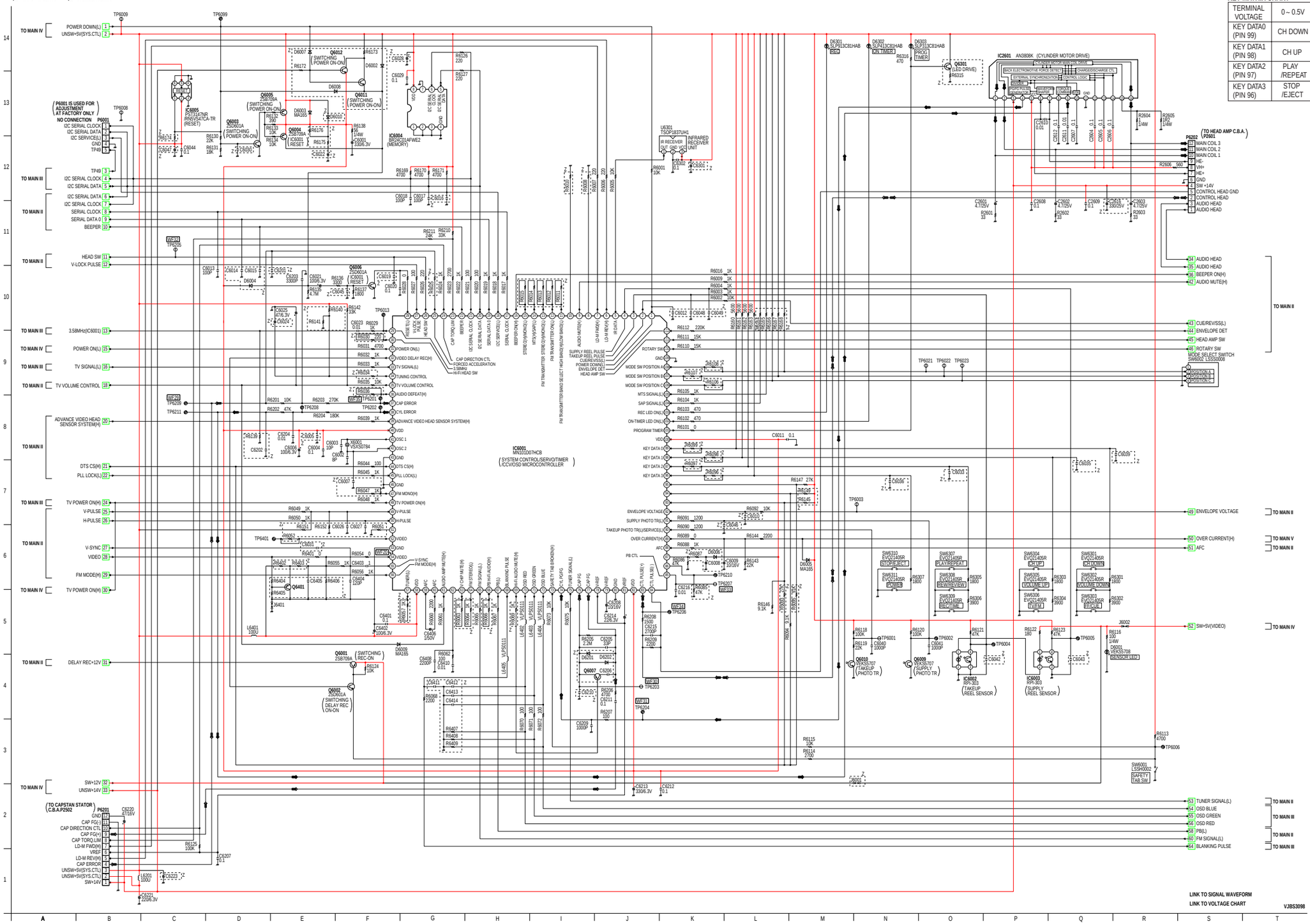
COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

KEY MATRIX CHART

TERMINAL VOLTAGE	0 ~ 0.5V	0.6 ~ 1.8V	1.9 ~ 3.1V
KEY DATA0 (PIN 99)	CH DOWN	VOLUME DOWN	FF/CUE
KEY DATA1 (PIN 98)	CH UP	VOLUME UP	TV/FM
KEY DATA2 (PIN 97)	PLAY /REPEAT	REW/ REVIEW	REC
KEY DATA3 (PIN 96)	STOP /EJECT	POWER	-----

CAPSTAN SERVO
CYLINDER SERVO



AG-513E TV/VCR MAIN I SCHEMATIC DIAGRAM

TV/VCR MAIN II (SIGNAL PROCESS/AUDIO/DEMODULATOR) SCHEMATIC DIAGRAM (A)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

REC VIDEO SIGNAL ⇦ PB VIDEO SIGNAL ⇦ REC AUDIO SIGNAL ⇦ PB AUDIO SIGNAL

TO MAIN I: I2C SERIAL DATA 6, I2C SERIAL CLOCK 7
TO MAIN III: 3.58MHz(IC3001) 65, KILLER DET 66, LINE VIDEO 67
TO MAIN I: V-LOCK PULSE 12, V-SYNC 27, VIDEO 28
TO MAIN III: UNSW+5V(VCJ) 68, PB VIDEO 69
TO MAIN I: ENVELOPE VOLTAGE 49, ROTARY SW 46
TO MAIN IV: UNSW+5V(VIDEO) 70

JK4701 VIDEO AUDIO(L)

U7001 ENG36701G UHF/VHF TUNER/TV DEMODULATOR UNIT
NC, GND, GND, FM-ANTENNA, GND, GND, SW+5V, (AGC), (BT), NC, SW+5V, DTS CS(H), SEERIAL DATA 0, SEERIAL CLOCK, PLL LOCK(L), UNSW+30V, IF, IF, NC, TUNER SIGNAL(L), AFC, TUNER AUDIO, FM SIGNAL(L), FM MODE(H), TUNER VIDEO

TO MAIN III: 71 TUNER VIDEO
TO MAIN I: 29 FM MODE(H), 60 FM SIGNAL(L), 51 AFC, 53 TUNER SIGNAL(L), 22 PLL LOCK(L), 8 SERIAL CLOCK, 9 SERIAL DATA 0, 21 DTC CS(H)
TO MAIN IV: 72 UNSW+30V
P7001: 1 ESD GND
P7002: 1 FM ANTENNA, 79 SW+5V(VIDEO)
TO MAIN IV: 20 ADVANCE VIDEO HEAD SENSOR SYSTEM(H)
TO MAIN I: 10 BEEPER, 34 AUDIO HEAD, 25 V-PULSE, 26 H-PULSE
TO MAIN III: 73 H-PULSE, 74 V-PULSE
TO MAIN I: 42 AUDIO MUTE(H), 36 BEEPER ON(H), 18 TV VOLUME CONTROL
TO MAIN V: 75 DC+13V
P4591 (TO SPEAKER): 1 GND, 2 AUDIO OUT

IC3201 MN3885S (CCD 1H DELAY)
IC3001 AN3479FBP-A (VIDEO/AUDIO PROCESS)
IC4501 LA4285 (TV SOUND OUTPUT)
Q3001 2SB709A (BUFFER)
Q3002 2SD601A (AMP)
Q3003 (SWITCHING PB-OFF)
Q3301 2SD601A (INVERTER)
Q3302 (INVERTER)
Q3303 (COMPARATOR)
Q4001 2SB709A (AUDIO DELAY REC ON-OFF)
Q4002 2SD601(RS) (AUDIO DELAY REC ON-OFF)
Q4003 2SD601(RS) (AUDIO DELAY REC ON-OFF)
Q4101 2SD601A (BIAS OSC)
Q4171 2SD601A (SWITCHING BEEPER ON-ON)
T4101 VLT5030-1
FL4051 VLFS0014
D4591 RD9.1EW (9.1V)
EARPHONE JACK

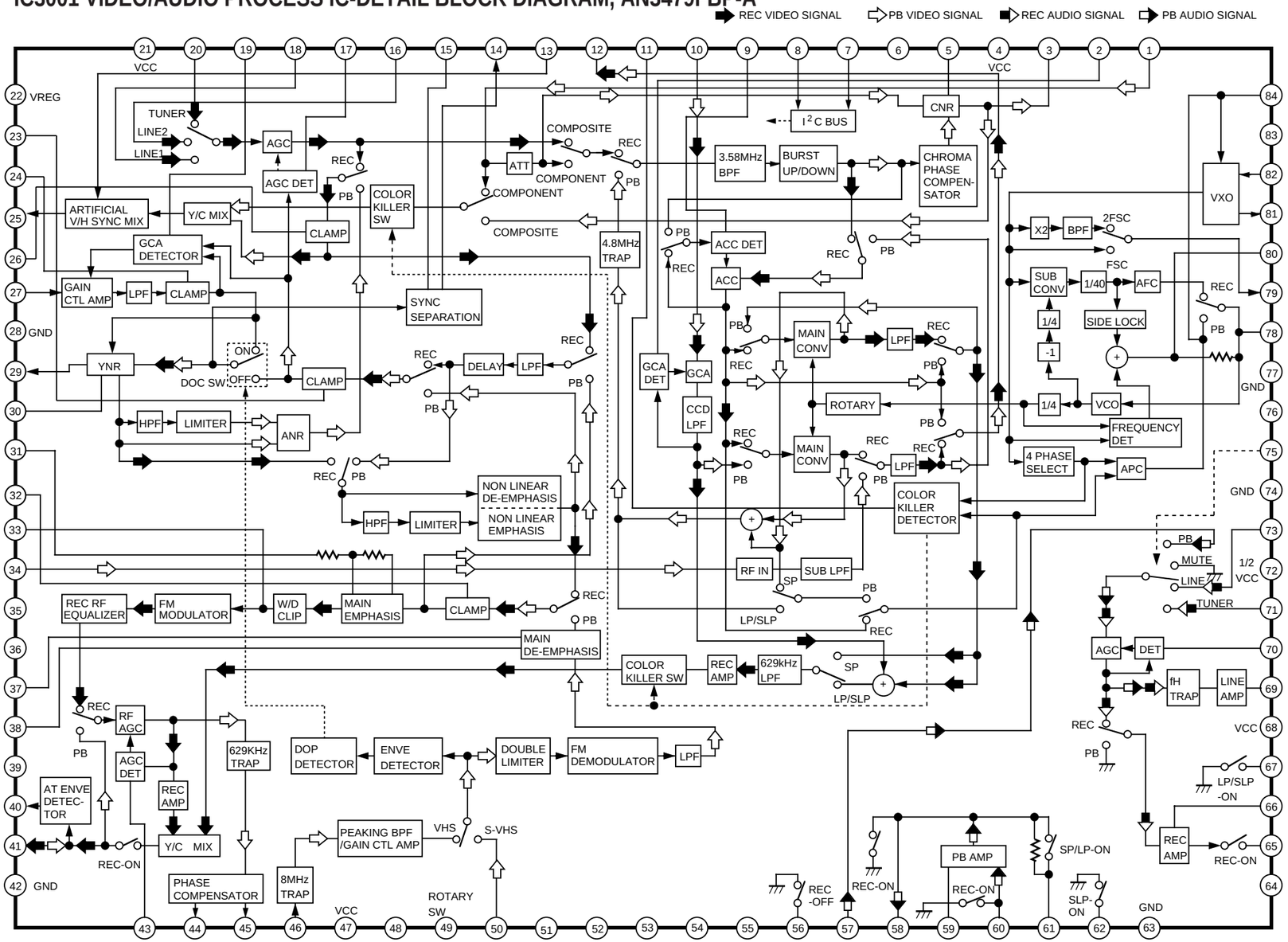
REC/PB CHROMINANCE SIGNAL PROCESS
REC/PB LUMINANCE SIGNAL PROCESS
SYNC SEPARATION
I2C CONTROL

FULL ERASE HEAD UNIT P4001: GND, FE-HEAD
(TO HEAD AMP C.B.A.) P3301: SW+12V, PB(L), AUDIO HEAD, DELAY REC+12V, REC/PB VIDEO, REC/PB GND, AUDIO ERASE HEAD, AUDIO ERASE HEAD, GND, GND, SW+12V, DELAY REC(H), PB(L), CUE/REVS(L), HEAD AMP SW, ENVELOPE DET, ENVELOPE DET, HEAD AMP SW, CUE/REVS(L), HEAD SW

LINK TO SIGNAL WAVEFORM
LINK TO VOLTAGE CHART
VJBS3098

AG-513E TV/VCR MAIN II SCHEMATIC DIAGRAM

IC3001 VIDEO/AUDIO PROCESS IC-DETAIL BLOCK DIAGRAM, AN3479FBP-A



TV/VCR MAIN III (TV Y/C PROCESS) SCHEMATIC DIAGRAM (A)

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

REC VIDEO SIGNAL ⬅ PB VIDEO SIGNAL ⇦

TO MAIN II ← 65 3.58MHz(IC3001)

TO MAIN I ← Z C5607 — R5601 0 — 13 3.58MHz(IC6001)

TO MAIN I ← 56 OSD RED, 55 OSD GREEN, 54 OSD BLUE

TO MAIN IV ← SW+12V 80

TP5311 — 24 TV POWER ON(H)

Q5601 2SD601A (BUFFER) — D5601 MA165 — R5611 22K — R5613 4700 Z — R5614 56K — D5603 MA165 — D5602 MA165 — R5612 22K

Q5302 (BUFFER) Z — R5302 Z — R5303 Z — R5308 56K — R5304 47K — R5309 270K

Q5901 2SD2259 +9V REGULATOR — R5320 Z — R5902 1K — C5902 47/16V — C5601 0.01

Q5303 SWITCHING TV POWER ON-ON — R5323 Z — R5322 — R5321 — C5309 — C5904 0.01 — C5903 47/16V — C5303 0.47/50V — C5932 0.01 — C5301 10/16V

C5302 4.7/25V — R5305 220K — R5306 22K — C5305 0.33/50V — R5602 — R5603 Z — C5602 0.1 — R5604 3300 — C5604 1/50V — C5605 0.015 — R5314 2700 — R5315 2700 — R5316 2700 — C5603 15P — X5601 VSXS0190 -TB

R5318 Z — R5319 — R5503 470 — D5506 — D5504 — MA165 D5301 — MA165 D5302 — MA165 D5303 Z

TP5301 TP5302 TP5303 TP5304

TO CRT C.B.A. (P351) — P5301
1 SW+12V
2 RED
3 GREEN
4 BLUE
5 GND

3 TP49
64 BLANKING PULSE
← TO MAIN I

9.6V — BLACK LEVEL DETECTOR — VCO — VCC1 — PEDESTAL CLAMP — APL DET — I2C BUS /DAC — COLOR KILLER DET. — LINE TUNER — PB MUTE

CHROMINANCE SIGNAL PROCESS — LUMINANCE SIGNAL PROCESS — MATRIX — OSD CHARACTER MIX/ BLANKING — BLANKING — H.PULSE PROCESS — V.PULSE PROCESS

R — WF27 — R5311 330
G — WF26 — R5312 330
B — WF25 — R5313 330
R5317 100
WF24 — R5512 150
R5515 3300 — R5513 100 — R5506 47K
GND — WF23
R5510 100
WF22
VCC 6.1V — C5505 47/16V — C5516 0.033 — R5514 1M Z
AFC2 — C5506 0.01
GND
WF21
C5510 1/50V — R5511 2200 — C5511 0.033
X5501 CSB503F38 — C5508 220P
R5508 560
D5501 MA4062-L (6.2V)
R5407 0
D5505 Z
TP5505
R5504 100 — C5507 10/16V — R5507 100
R5505 3.24K 1/10W — R5406 100
R5405 8200

TP5402 TP5403 TP5310 TP5506 TP5504 TP5503 TP5502 TP5501 TP5401

82 V.HEIGHT CONTROL
83 HIGH VOLTAGE PROTECTOR
84 ABL
85 H-PULSE
86 AFC
87 BLANKING PULSE
88 V POSITION
89 H-PULSE
90 V-PULSE
← TO MAIN V

73 H-PULSE
74 V-PULSE
← TO MAIN II

TO MAIN I ← I2C SERIAL CLOCK 4
TO MAIN I ← I2C SERIAL DATA 5
TO MAIN II ← KILLER DET 66
TO MAIN II ← LINE VIDEO 67 — TP5307 — C5306 10/16V — R5324 100 — Z R5326 — C5307 10/16V — R5325 100 — L5901 100U
TO MAIN II ← TUNER VIDEO 71 — TP5308
TO MAIN IV ← UNSW+5V(VIDEO) 81
TO MAIN II ← UNSW+5V(VCJ) 68
TO MAIN II ← PB VIDEO 69 — TP5309 — C5905 100/6.3V — C5906 0.01

IC5301 AN5367FB LUMINANCE/ CHROMINANCE PROCESS — C5308 10/16V — R5403 220 — Z R5404 — C5403 2.2/50V

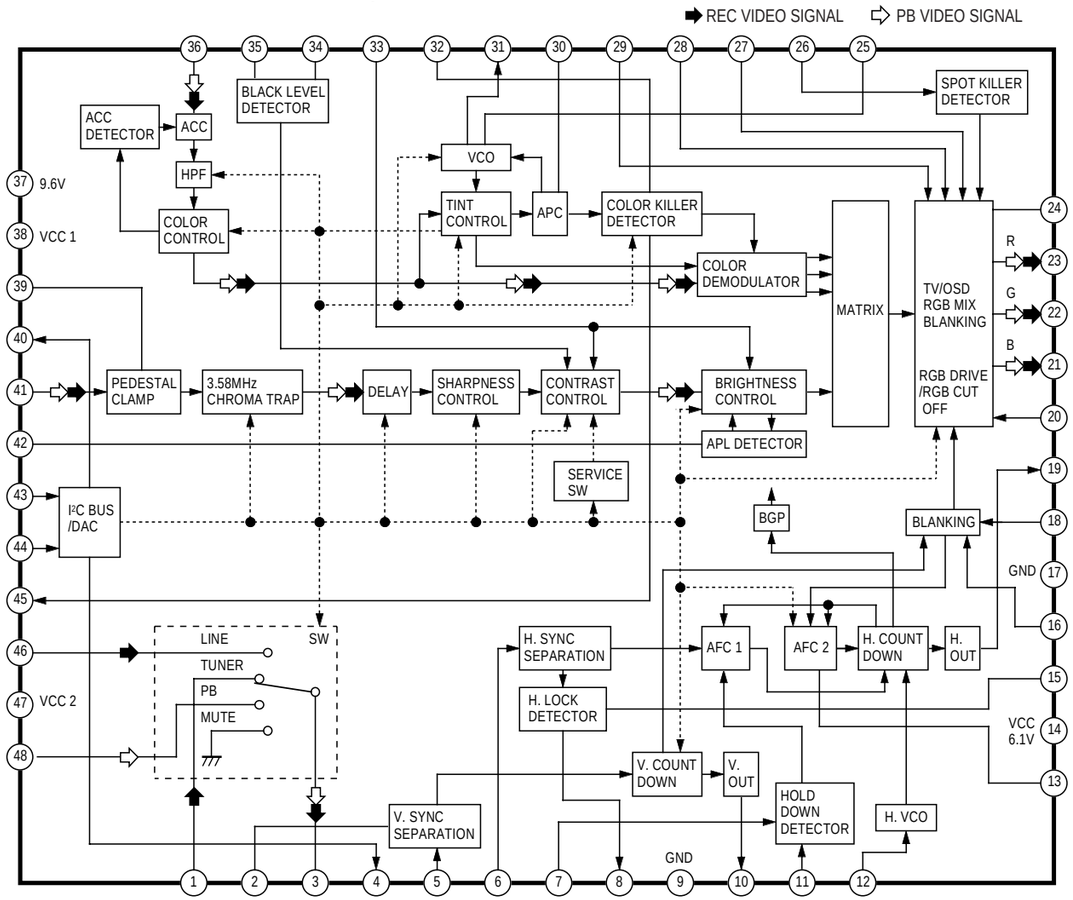
Q5301 2SD601A (BUFFER) — R5402 390K — C5402 2200P — C5502 680P — R5502 390K — C5401 0.22 — R5301 220 — R5401 560 — R5501 470 — C5501 0.018 — TP5305

TO MAIN I ← TV SIGNAL(L) 16

LINK TO SIGNAL WAVEFORM
LINK TO VOLTAGE CHART

VJBS3098

IC5301 LUMINANCE/CHROMINANCE PROCESS
IC-DETAIL BLOCK DIAGRAM, AN5367FB



TV/VCR MAIN IV (POWER SUPPLY) SCHEMATIC DIAGRAM (A)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

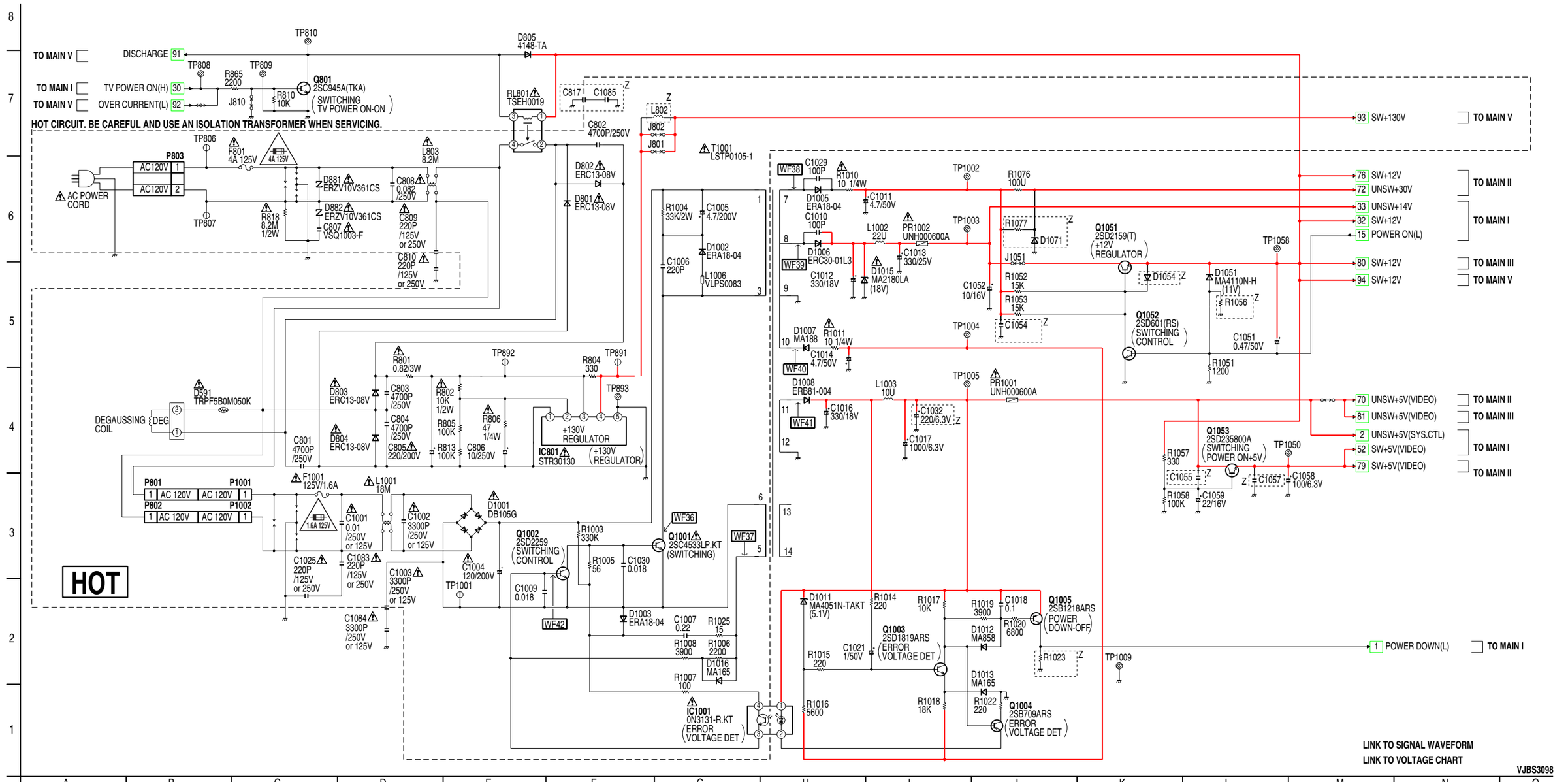
COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE 4A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÉME TYPE 4A 125V

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'T INCENDIE N'I UTILISERQUE DES FUSIBLE DE MÉME TYPE 1.6A 125V

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



AG-513E TV/VCR MAIN IV SCHEMATIC DIAGRAM

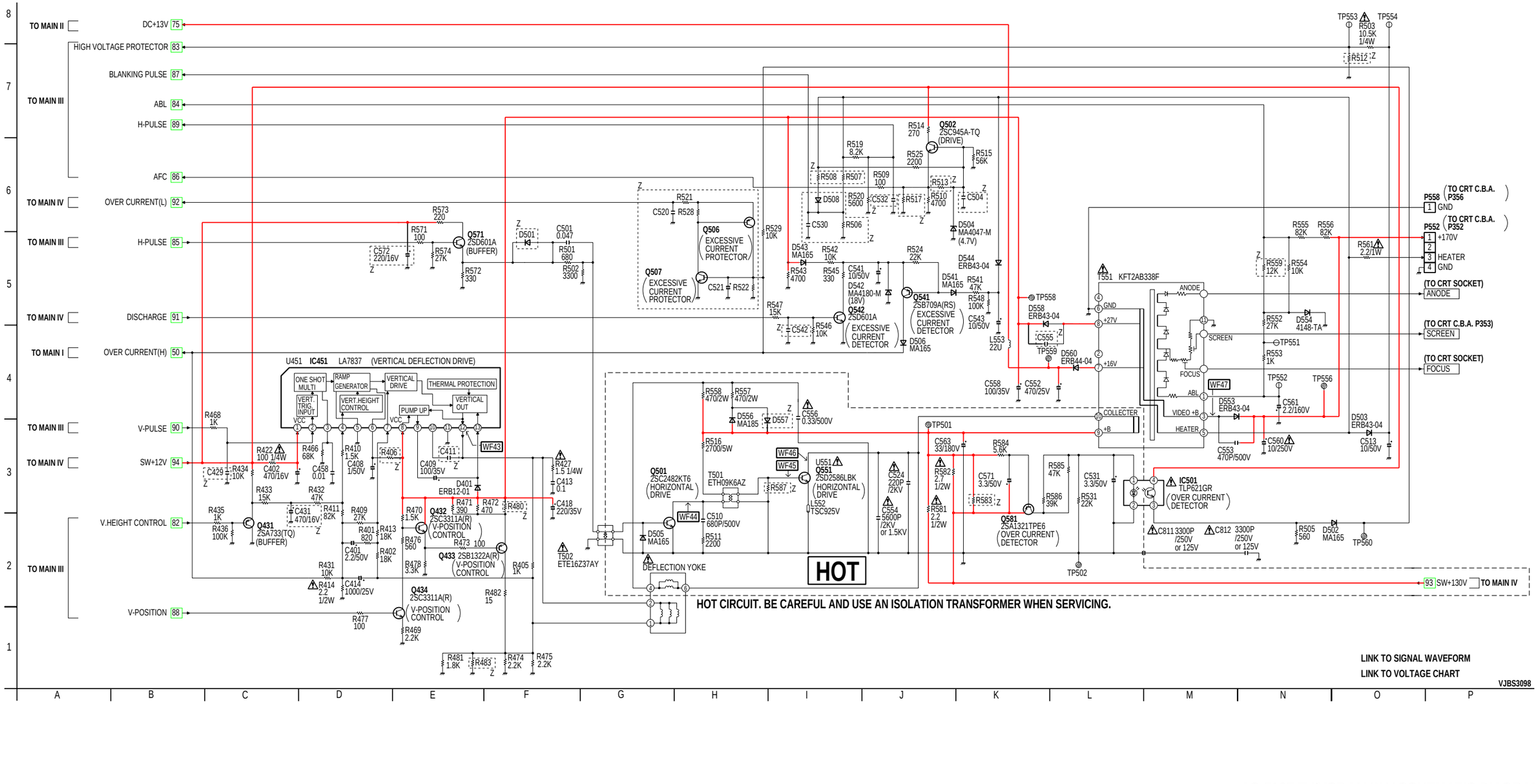
TV/VCR MAIN V (TV) SCHEMATIC DIAGRAM (A)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z



AG-513E TV/VCR MAIN V SCHEMATIC DIAGRAM

TV/VCR MAIN I (SYSTEM CONTROL/SERVO/CCV/OSD/OPERATION/CYLINDER DRIVE) SCHEMATIC DIAGRAM (B)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

KEY MATRIX CHART

TERMINAL VOLTAGE	0 ~ 0.5V	0.6 ~ 1.8V	1.9 ~ 3.1V
KEY DATA0 (PIN 99)	CH DOWN	VOLUME DOWN	FF/CUE
KEY DATA1 (PIN 98)	CH UP	VOLUME UP	TV/FM
KEY DATA2 (PIN 97)	PLAY /REPEAT	REW/ REVIEW	REC
KEY DATA3 (PIN 96)	STOP /EJECT	POWER	-----

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

CAPSTAN SERVO ◄ CYLINDER SERVO

TO MAIN IV: POWER DOWN(L) 1, UNSW+5V(SYS.CTL) 2

P6001 IS USED FOR ADJUSTMENT AT FACTORY ONLY. NO CONNECTION. P6001: I2C SERIAL CLOCK 1, I2C SERIAL DATA 2, I2C SERVICE(L) 3, GND 4, TP49 5

TO MAIN III: TP49 3, I2C SERIAL CLOCK 4, I2C SERIAL DATA 5

TO MAIN II: I2C SERIAL DATA 6, I2C SERIAL CLOCK 7, SERIAL CLOCK 8, SERIAL DATA O 9, BEEPER 10

TO MAIN II: HEAD SW 11, V-LOCK PULSE 12

TO MAIN III: 3.58MHz(IC6001) 13

TO MAIN II: Hi-Fi HEAD SW 14

TO MAIN IV: POWER ON(L) 15

TO MAIN III: TV SIGNAL(L) 16

TO MAIN II: TUNING CONTROL 17, TV VOLUME CONTROL 18, AUDIO DEFEAT(H) 19

ADVANCE VIDEO HEAD SENSOR SYSTEM(H) 20

TO MAIN II: DTS CS(H) 21, PLL LOCK(L) 22

TO MAIN III: FM MONO(H) 23, TV POWER ON(H) 24

TO MAIN II: V-PULSE 25, H-PULSE 26, V-SYNC 27, VIDEO 28

TO MAIN IV: FM MODE(H) 29, TV POWER ON(H) 30

TO MAIN II: DELAY REC+12V 31

TO MAIN IV: SW+12V 32, UNSW+14V 33

(TO CAPSTAN STATOR C.B.A. P2502) P6201: GND 12, CAP PG(-) 11, CAP DIRECTION CTL 10, CAP FG(+) 9, CAP TORQ LIM 8, LD-M FWD(H) 7, VREF 6, LD-M REV(H) 5, CAP ERROR 4, UNSW+5V(SYS.CTL) 3, UNSW+5V(SYS.CTL) 2, SW+14V 1

IC6001 MN101D07HCB (SYSTEM CONTROL/SERVO/TIMER /CCV/OSD MICROCONTROLLER)

IC8004 BR93C01AFWE2 (MEMORY)

U6301 TSOP1837UH1 (INFRARED RECEIVER UNIT): IR RECEIVER OUT, GND, VCC

D6301 SLP913C81HAB (REC) ◄ D6302 SLP413C81HAB (ON TIMER) ◄ D6303 SLP313C81HAB (PROG TIMER) ◄ R6316 470 ◄ Q6301 (LED DRIVE) ◄ R6315

IC2601 AN3808K (CYLINDER MOTOR DRIVE): THERMAL PROTECTION, BACK ELECTROMOTIVE FORCE DETECT, CHARGE/DISCHARGE CTL, EXTERNAL SYNCHRONIZATION, CONTROL LOGIC, SPEED CONTROL, PWM CONTROL, PHASE COMPARATOR, POWER SAVE, FG/PG AMP, END

(TO HEAD AMP C.B.A. P2501) P6202: MAIN COIL 3 10, MAIN COIL 2 11, MAIN COIL 1 12, HE- 1, VH+ 2, HE+ 3, GND 4, SW +14V 5, CONTROL HEAD GND 6, CONTROL HEAD 7, AUDIO HEAD 8, AUDIO HEAD 9, AUDIO HEAD 34, AUDIO HEAD 35

TO MAIN II: BEEPER ON(H) 36, STEREO(H)/MONO(L) 37, MTS(H)/SAP(L) 38, FM TRANSMITTER STEREO(H)/MONO(L) 39, FM TRANSMITTER ON(L) 40, FM TRANSMITTER BAND SELECT HIGH BAND(H)/LOW BAND(L) 41, AUDIO MUTE(H) 42

TO MAIN II: CUE/REVISS(L) 43, ENVELOPE DET 44, HEAD AMP SW 45, ROTARY SW 46

MODE SELECT SWITCH SW6002 LSS3008: POSITION A, POSITION B, POSITION C

TO MAIN II: MTS SIGNAL(L) 47, SAP SIGNAL(L) 48

TO MAIN II: ENVELOPE VOLTAGE 49

TO MAIN V: OVER CURRENT(H) 50

TO MAIN II: AFC 51

TO MAIN IV: SW+5V(VIDEO) 52

TO MAIN II: TUNER SIGNAL(L) 53, OSD BLUE 54, OSD GREEN 55, OSD RED 56

TO MAIN III: V CHIP MUTE(H) 57

TO MAIN II: PB(L) 58, PB Hi-Fi AUDIO(H) 59, FM SIGNAL(L) 60, FM STEREO(L) 61, TUNER(L) 62

TO MAIN III: BLANKING PULSE 64

LINK TO SIGNAL WAVEFORM
LINK TO VOLTAGE CHART

VJBS3096

AG-520E TV/VCR MAIN I SCHEMATIC DIAGRAM

TV/VCR MAIN II (SIGNAL PROCESS/AUDIO/DEMODULATOR) SCHEMATIC DIAGRAM (B)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

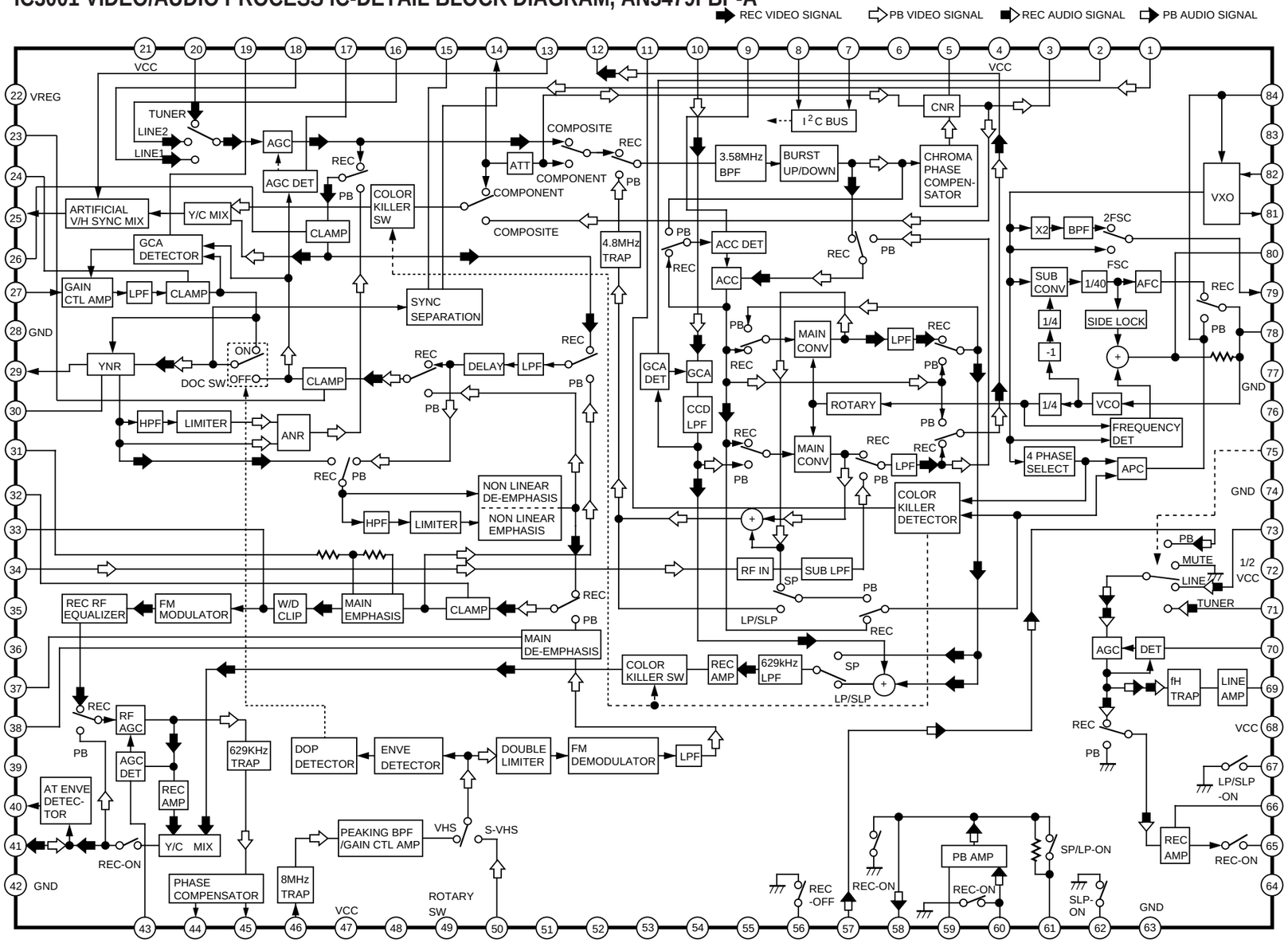
REC VIDEO SIGNAL ⇦ PB VIDEO SIGNAL ⇦ REC AUDIO SIGNAL ⇦ PB AUDIO SIGNAL

LINK TO SIGNAL WAVEFORM
LINK TO VOLTAGE CHART

VJBS3096

AG- 520E TV/VCR MAIN II SCHEMATIC DIAGRAM

IC3001 VIDEO/AUDIO PROCESS IC-DETAIL BLOCK DIAGRAM, AN3479FBP-A



TV/VCR MAIN III (TV Y/C PROCESS) SCHEMATIC DIAGRAM (B)

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

REC VIDEO SIGNAL ⇦ PB VIDEO SIGNAL

TO MAIN II ← 65 3.58MHz(IC3001)

TO MAIN I ← 13 3.58MHz(IC6001)

TO MAIN I ← 56 OSD RED, 55 OSD GREEN, 54 OSD BLUE

TO MAIN IV ← SW+12V 80

TO MAIN I ← 24 TV POWER ON(H)

TO MAIN II ← SW+9V 77

TO MAIN I ← I2C SERIAL CLOCK 4, I2C SERIAL DATA 5

TO MAIN II ← KILLER DET 66, LINE VIDEO 67, TUNER VIDEO 71

TO MAIN IV ← UNSW+5V(VIDEO) 81

TO MAIN II ← UNSW+5V(VCJ) 68, PB VIDEO 69

TO MAIN I ← TV SIGNAL(L) 16

TO MAIN I ← 3 TP49, 64 BLANKING PULSE

TO MAIN V ← 82 V.HEIGHT CONTROL, 83 HIGH VOLTAGE PROTECTOR, 84 ABL, 85 H-PULSE, 86 AFC, 87 BLANKING PULSE, 88 V POSITION, 89 H-PULSE, 90 V-PULSE

TO MAIN II ← 73 H-PULSE, 74 V-PULSE

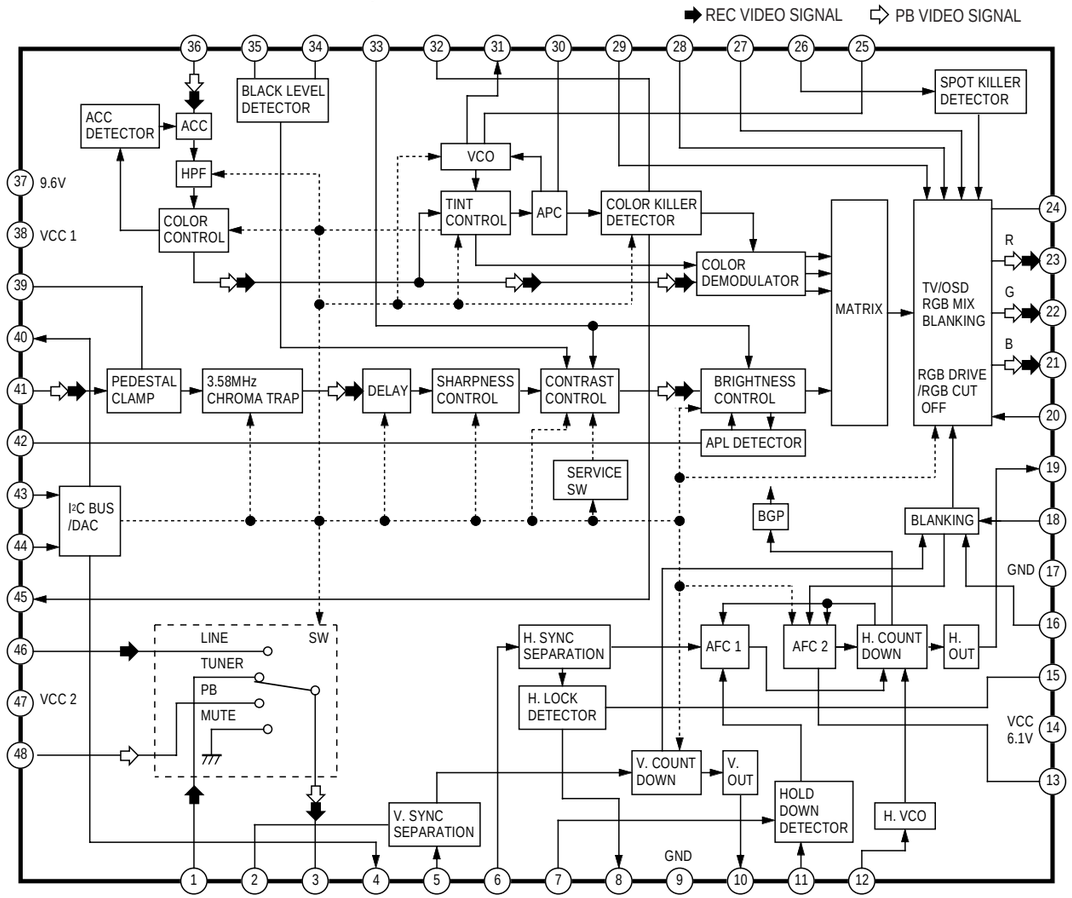
TO CRT C.B.A. P351 ← P5301: 1 SW+12V, 2 RED, 3 GREEN, 4 BLUE, 5 GND

LINK TO SIGNAL WAVEFORM
LINK TO VOLTAGE CHART

VJBS3096

AG-520E TV/VCR MAIN III SCHEMATIC DIAGRAM

IC5301 LUMINANCE/CHROMINANCE PROCESS
IC-DETAIL BLOCK DIAGRAM, AN5368FB



TV/VCR MAIN IV (POWER SUPPLY) SCHEMATIC DIAGRAM (B)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

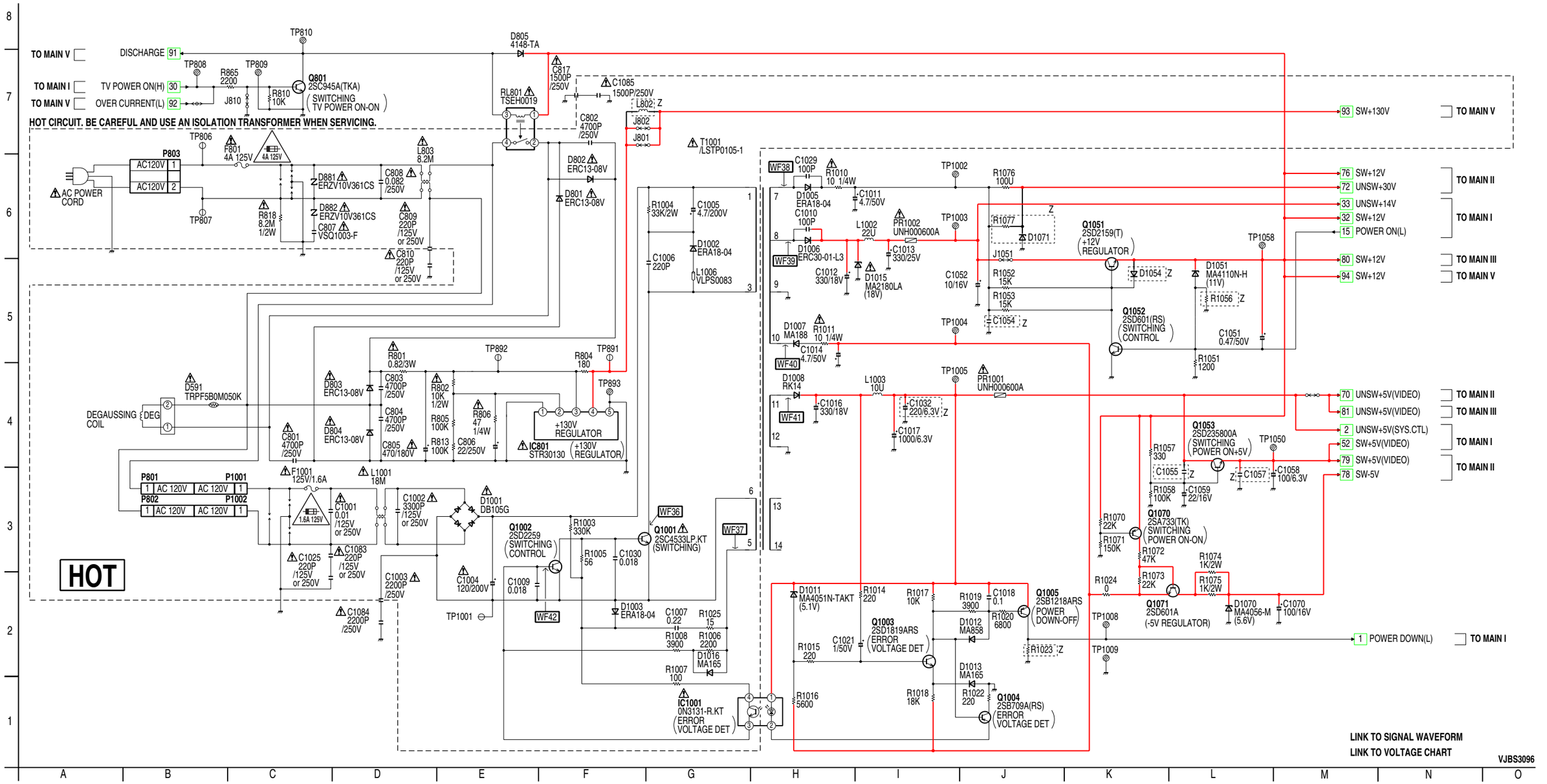
COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE 4A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÉME TYPE 4A 125V

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'T INCENDIE N'I UTILISERQUE DES FUSIBLE DE MÉME TYPE 1.6A 125V

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



AG-520E TV/VCR MAIN IV SCHEMATIC DIAGRAM

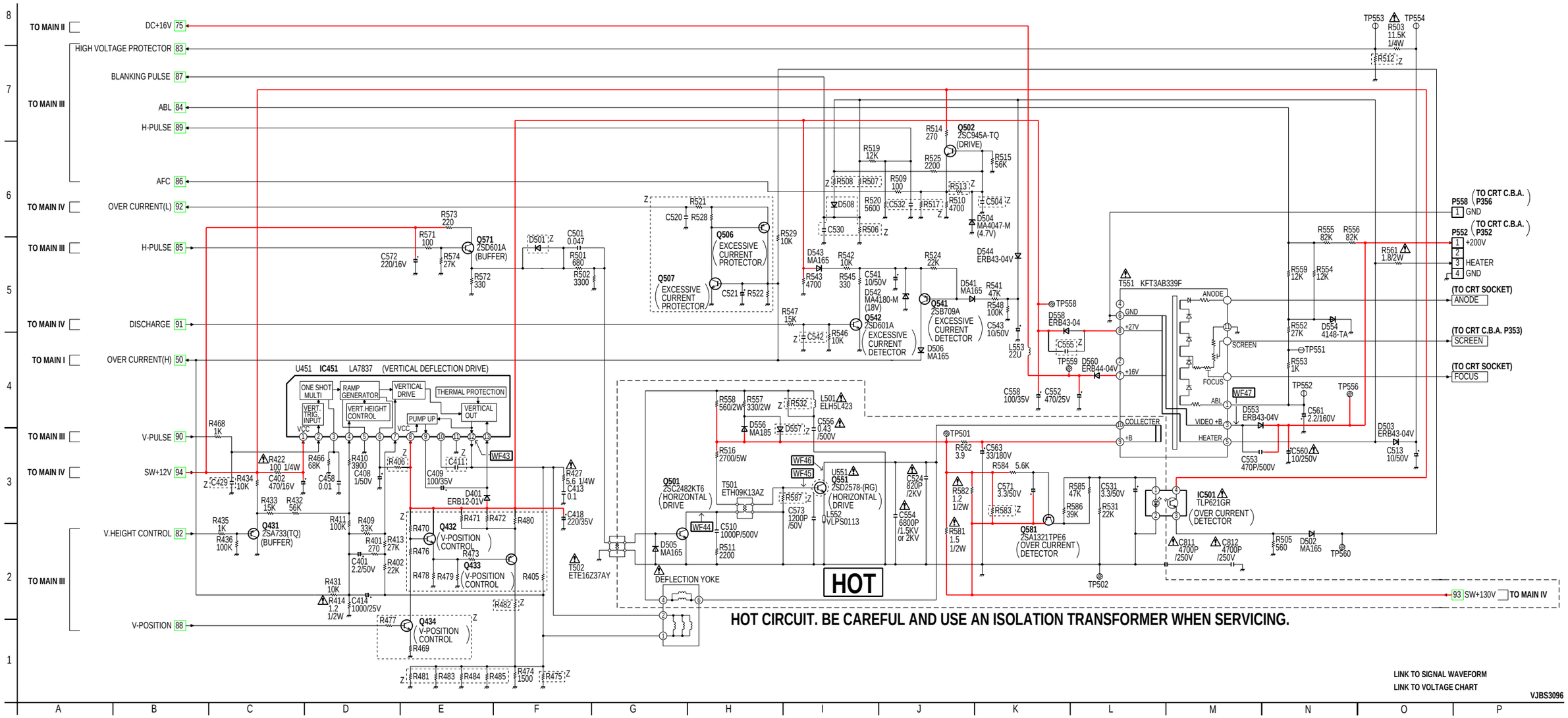
TV/VCR MAIN V (TV) SCHEMATIC DIAGRAM (B)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



AG-520E TV/VCR MAIN V SCHEMATIC DIAGRAM

CAPSTAN STATOR SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

NOTE:
WHEN INSTALLING THE IC2501(AN3846SC) OR CAPSTAN STATOR C.B.A.,
BE SURE TO APPLY SILICON GREASE(VFK1301). REFER TO "CAPSTAN STATOR C.B.A."
OF MACHANISM SECTION IN DISASSEMBLY/ASSEMBLY PROCEDURES.

NOTE:
THE FOLLOWING PARTS ON THE CAPSTAN STATOR C.B.A. ARE NOT SUPPLIED SEPARATELY.
PLEASE ORDER AND REPLACE WITH THE CIRCUIT BOARD ASSEMBLY INSTEAD OF INDIVIDUAL PARTS.
(Q2501, Q2502, Q2503, CAPSTAN COIL)

CAPSTAN SERVO

LOADING MOTOR UNIT
LOADING MOTOR
P2503
LD-M(+) 2
LD-M(-) 1

IC2501 AN3846SC (CAPSTAN/LOADING MOTOR DRIVE)
LOADING MOTOR CONTROL LOGIC
TORQUE COMMAND
DIRECTION CONTROL LOGIC
CAPSTAN MOTOR COIL DRIVE
UPPER DRIVE CONTROL
LOWER DRIVE CONTROL
DIRECTION DETECT
POSITION SIGNAL PROCESS
VCC

(TO TV/VCR MAIN C.B.A. P6201) A
(TO TV/VCR MAIN C.B.A. P6201) B
P2502
GND 12
CAP FG(-) 11
CAP DIRECTION 10
CAP FG(+) 9
CAP TORQ.LIM 8
LD-M FWD(H) 7
V-REF 6
LD-M REV(H) 5
CAP ERROR 4
UNSW +5V(SYS.CTL) 3
UNSW +5V(SYS.CTL) 2
SW +14V 1

C2505 Z
C2508 0.1
C2509 0.1
R2505 2200
C2519 1000P
GND
R2501 1 1/8W
R2502 1 1/8W
C2506 0.01
C2504 0.01
C2507 0.01
C2517 0.1
C2510 0.1
C2523 Z
C2520 2.2
C2524 Z
C2521 2.2
C2525 Z
C2522 2.2
C2511 0.1

Q2501 (HALL TRANSISTOR) H1- VH- VH+ H1+
Q2502 (HALL TRANSISTOR) H2- VH- VH+ H2+
Q2503 (HALL TRANSISTOR) H3- VH- VH+ H3+

CAPSTAN COIL

IC2505 EZMPS300F12
(MR HEAD)
VCC OUT1 GND

LINK TO VOLTAGE CHART

VJBS2007

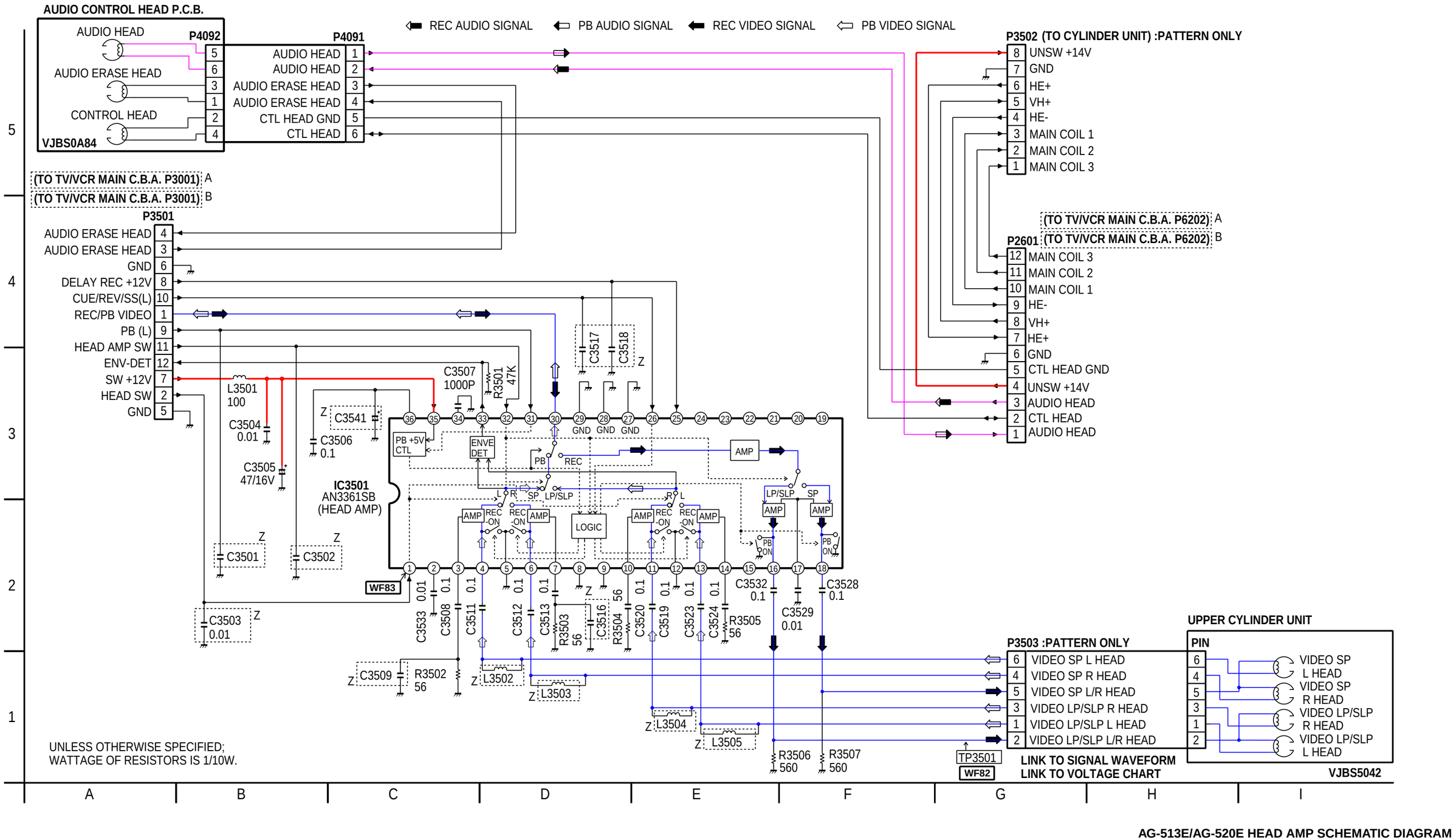
AG-513E/AG-520E CAPSTAN STATOR SCHEMATIC DIAGRAM

HEAD AMP SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z



AG-513E/AG-520E HEAD AMP SCHEMATIC DIAGRAM

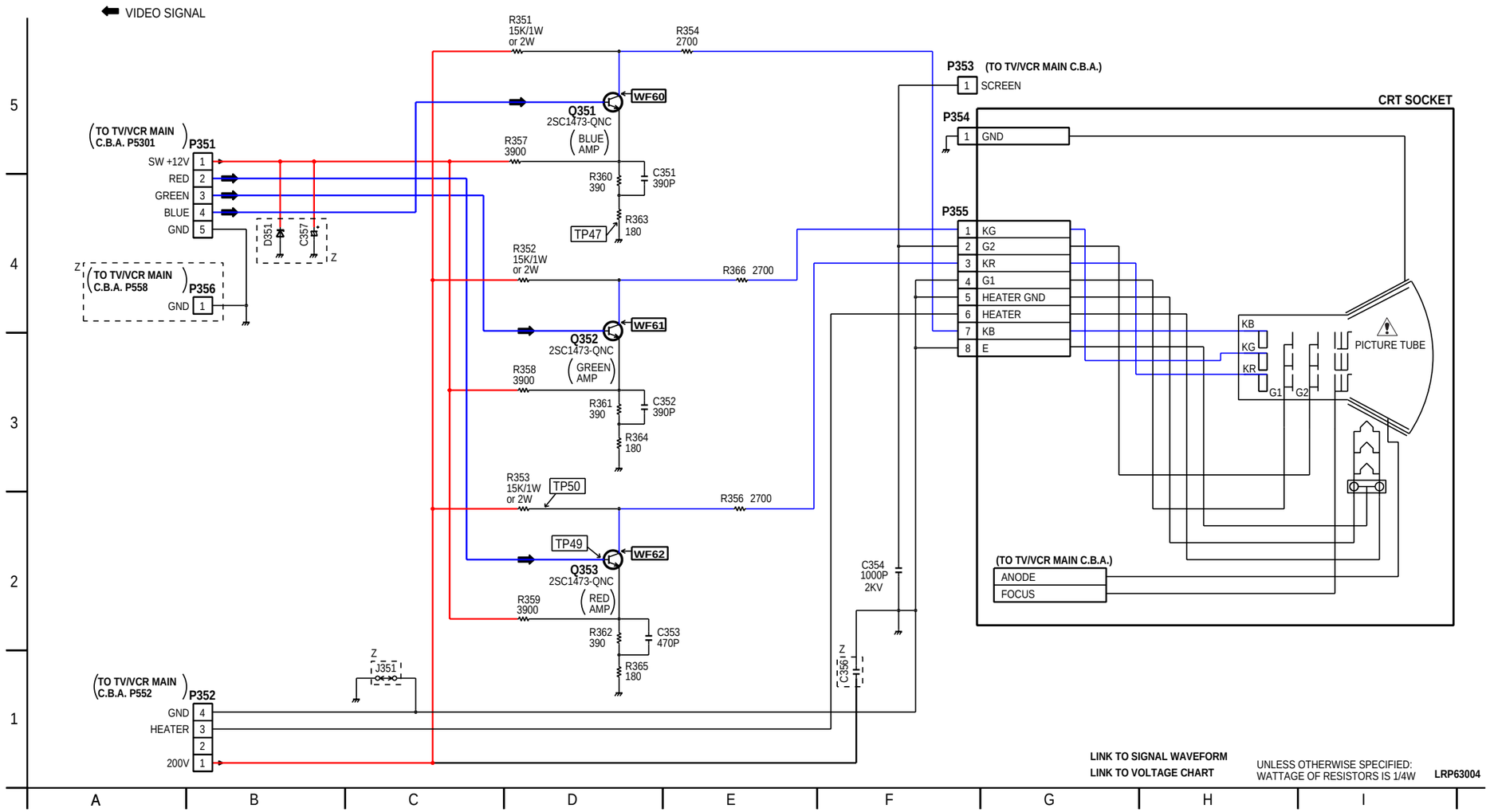
CRT SCHEMATIC DIAGRAM (A)

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z



LINK TO SIGNAL WAVEFORM
LINK TO VOLTAGE CHART

UNLESS OTHERWISE SPECIFIED:
WATTAGE OF RESISTORS IS 1/4W

LRP63004

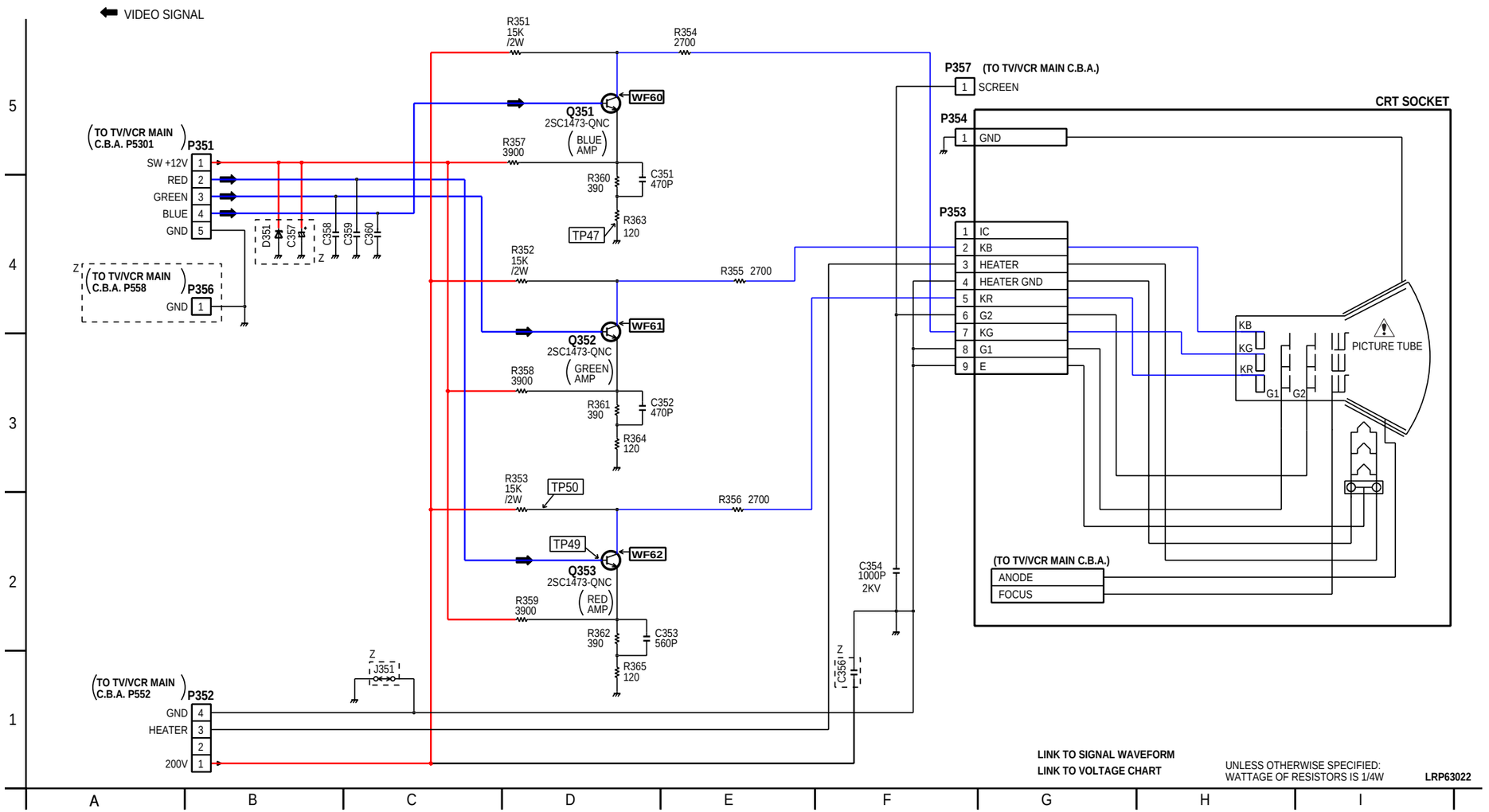
CRT SCHEMATIC DIAGRAM (B)

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z



AG-520E CRT SCHEMATIC DIAGRAM

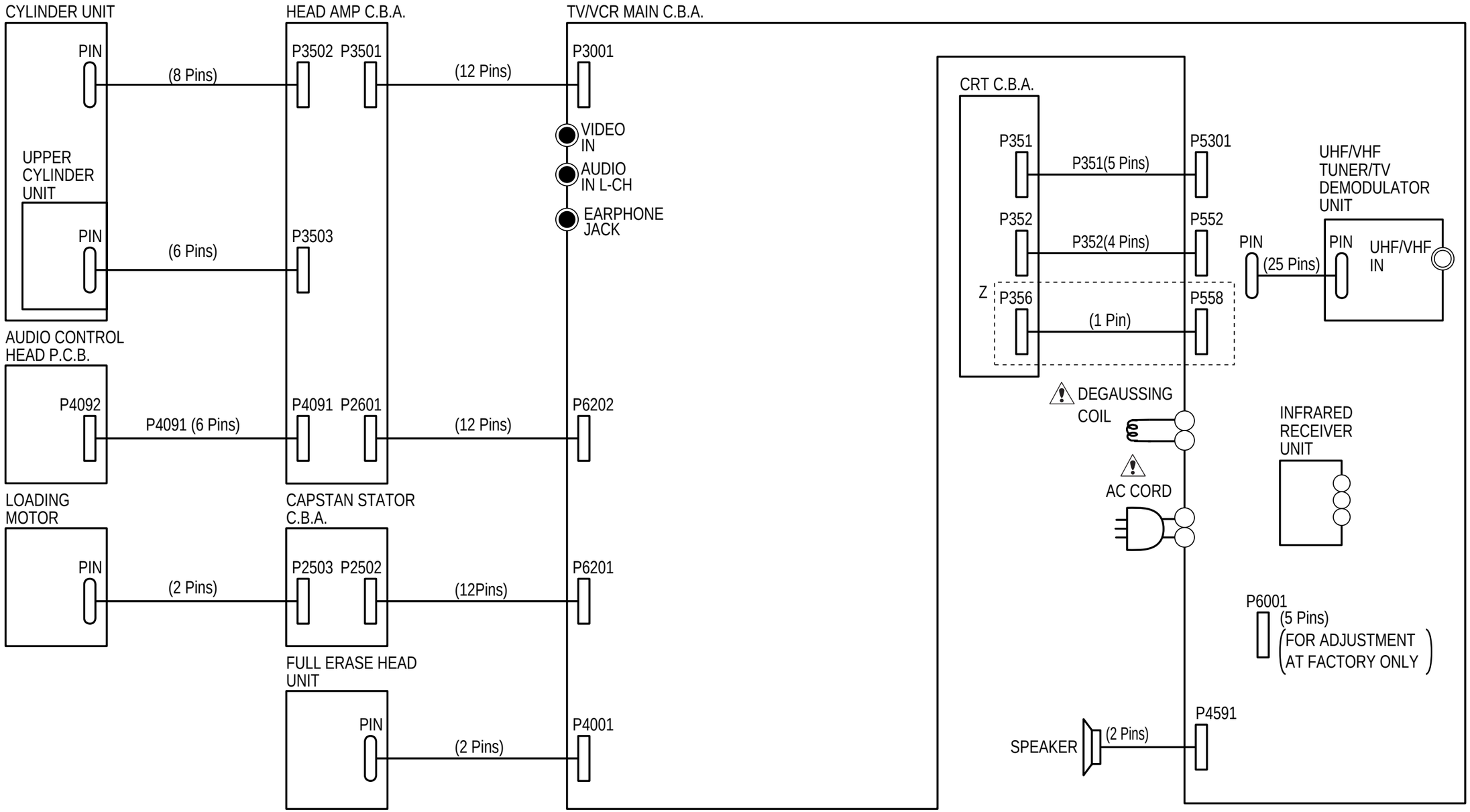
INTERCONNECTION SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

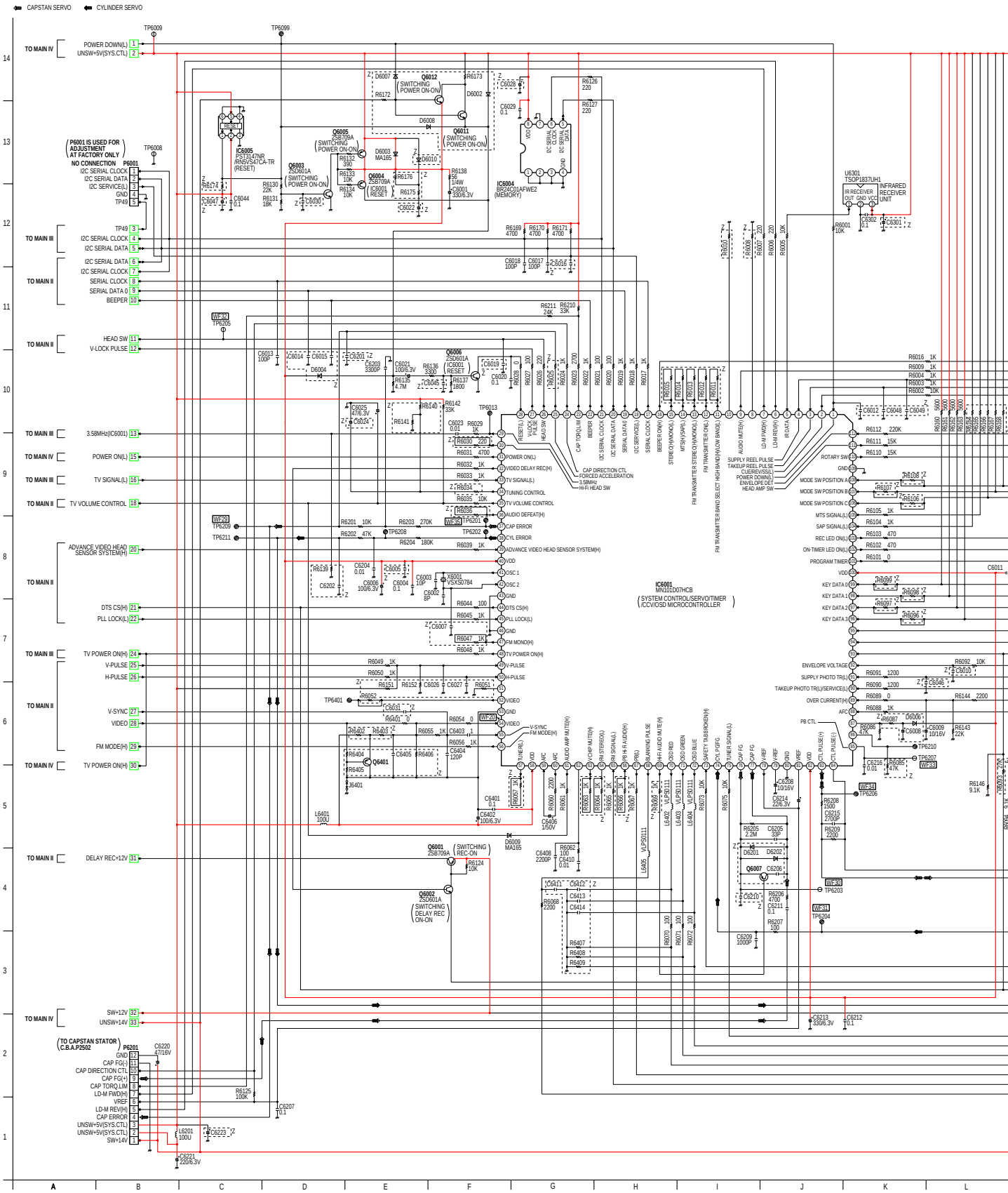
MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z



8.2. MAIN SCHEMATIC DIAGRAM

(Model: AG-513E)

TV/VCR MAIN I (SYSTEM CONTROL/SERVO/CCV/OSD/OPERATION/CYLINDER DRIVE) SCHEMA



DRIVE) SCHEMATIC DIAGRAM (A)

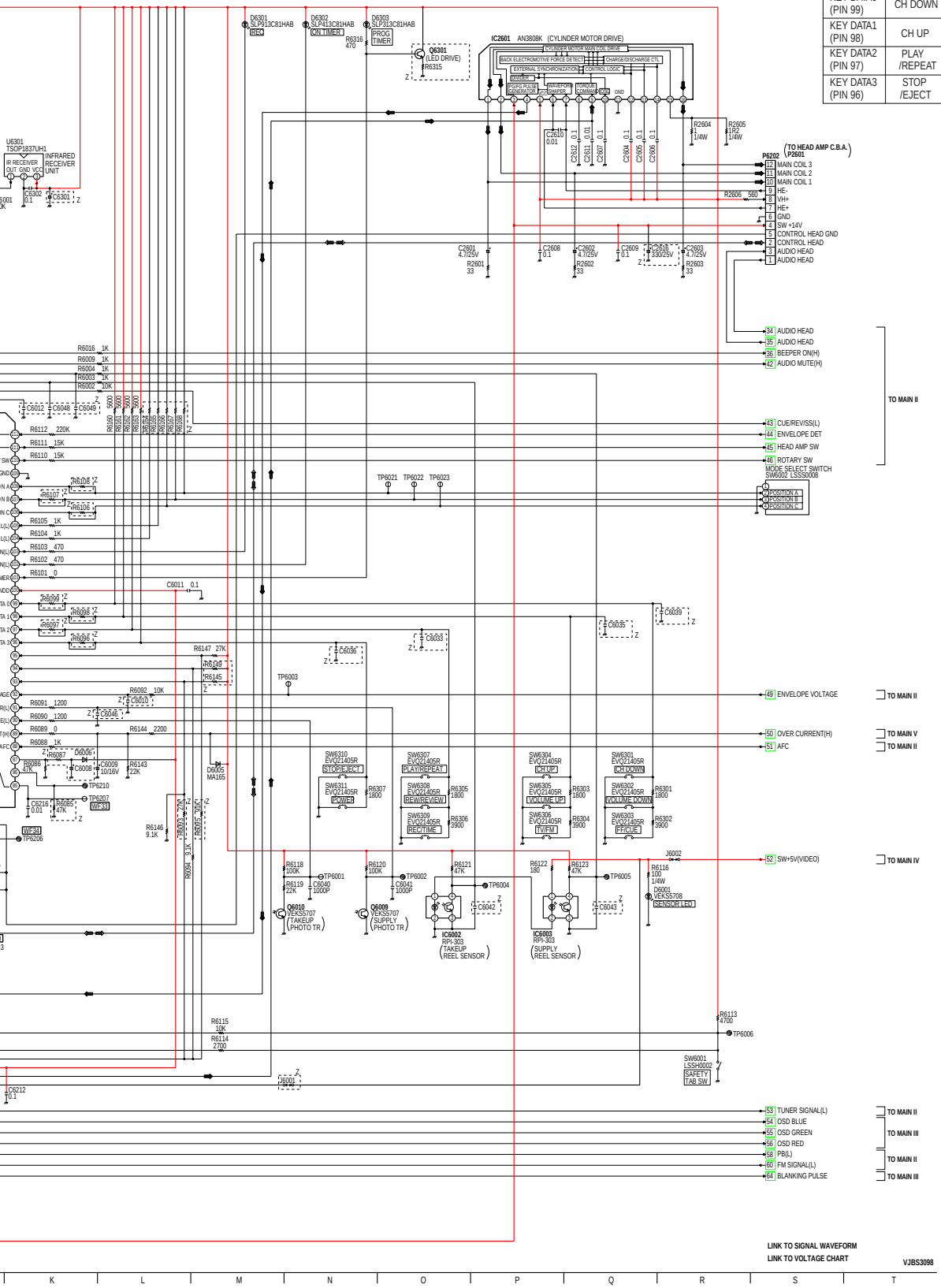
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

KEY MATRIX CHART

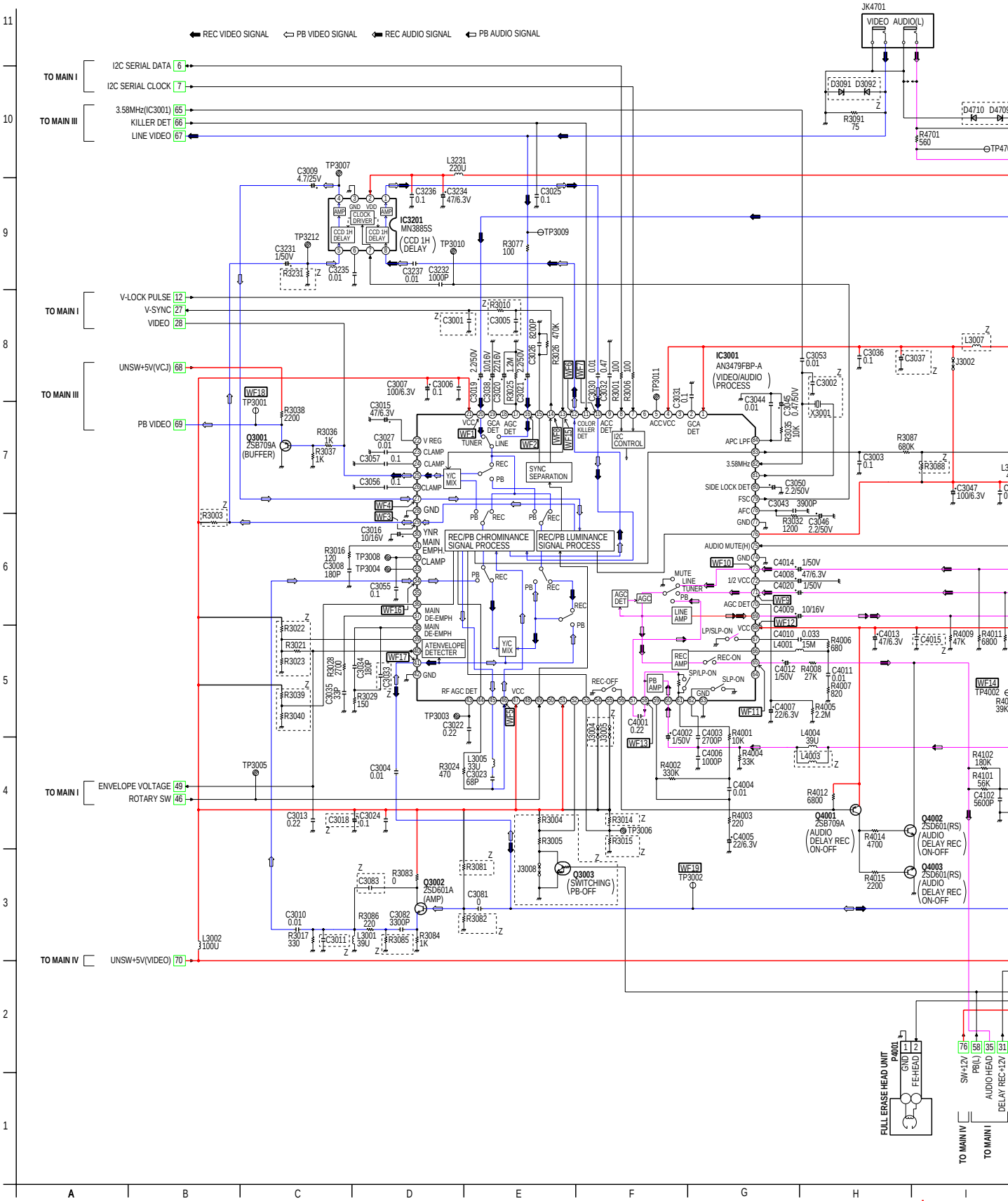
TERMINAL VOLTAGE	0 ~ 0.5V	0.6 ~ 1.8V	1.9 ~ 3.1V
KEY DATA0 (PIN 99)	CH DOWN	VOLUME DOWN	FF/CUE
KEY DATA1 (PIN 98)	CH UP	VOLUME UP	TV/FM
KEY DATA2 (PIN 97)	PLAY /REPEAT	REW/ REVIEW	REC
KEY DATA3 (PIN 96)	STOP /EJECT	POWER	-----

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z



TV/VCR MAIN II (SIGNAL PROCESS/AUDIO/DEMODULATOR) SCHEMATIC DIAGRAM (A)



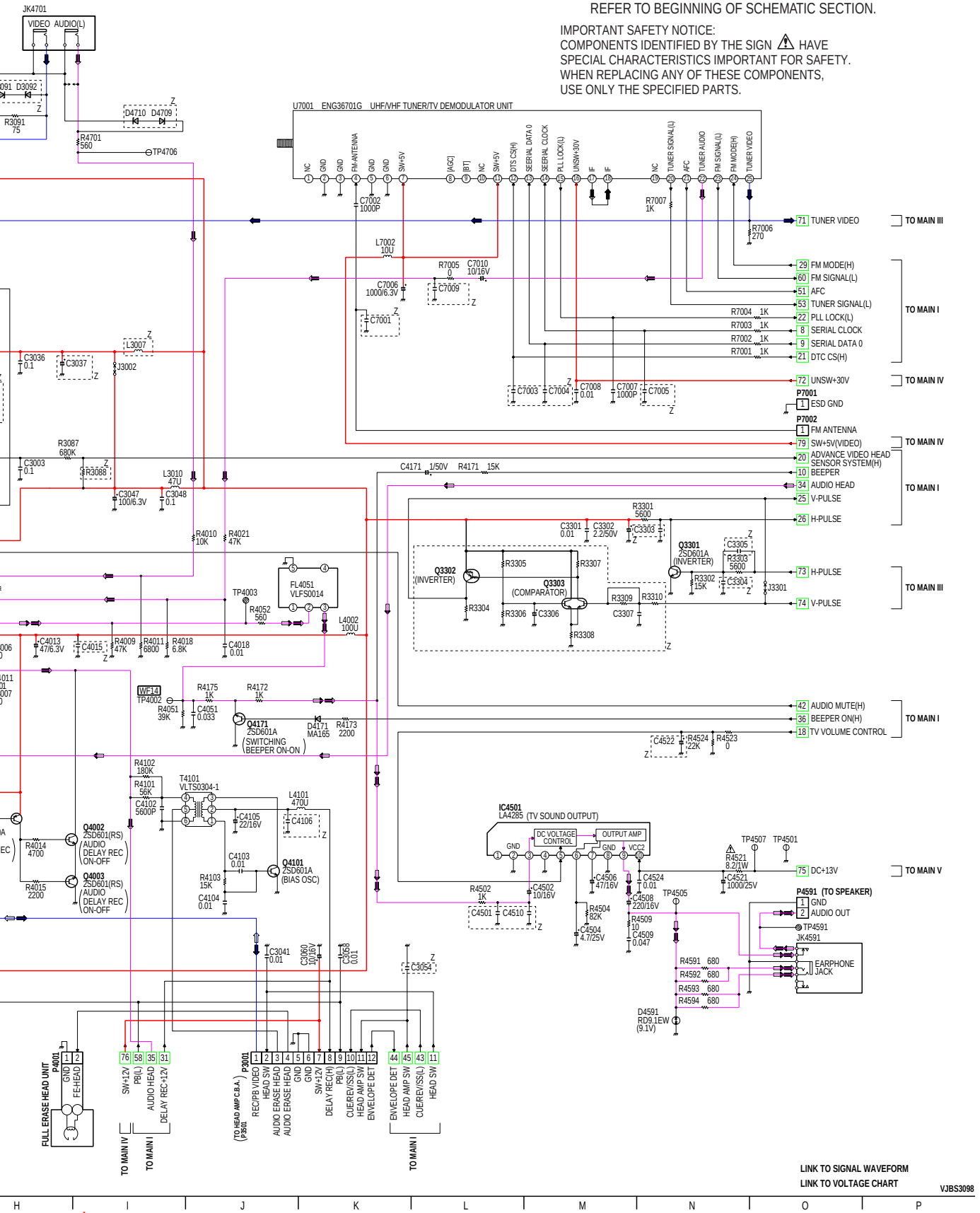
GRAM (A)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

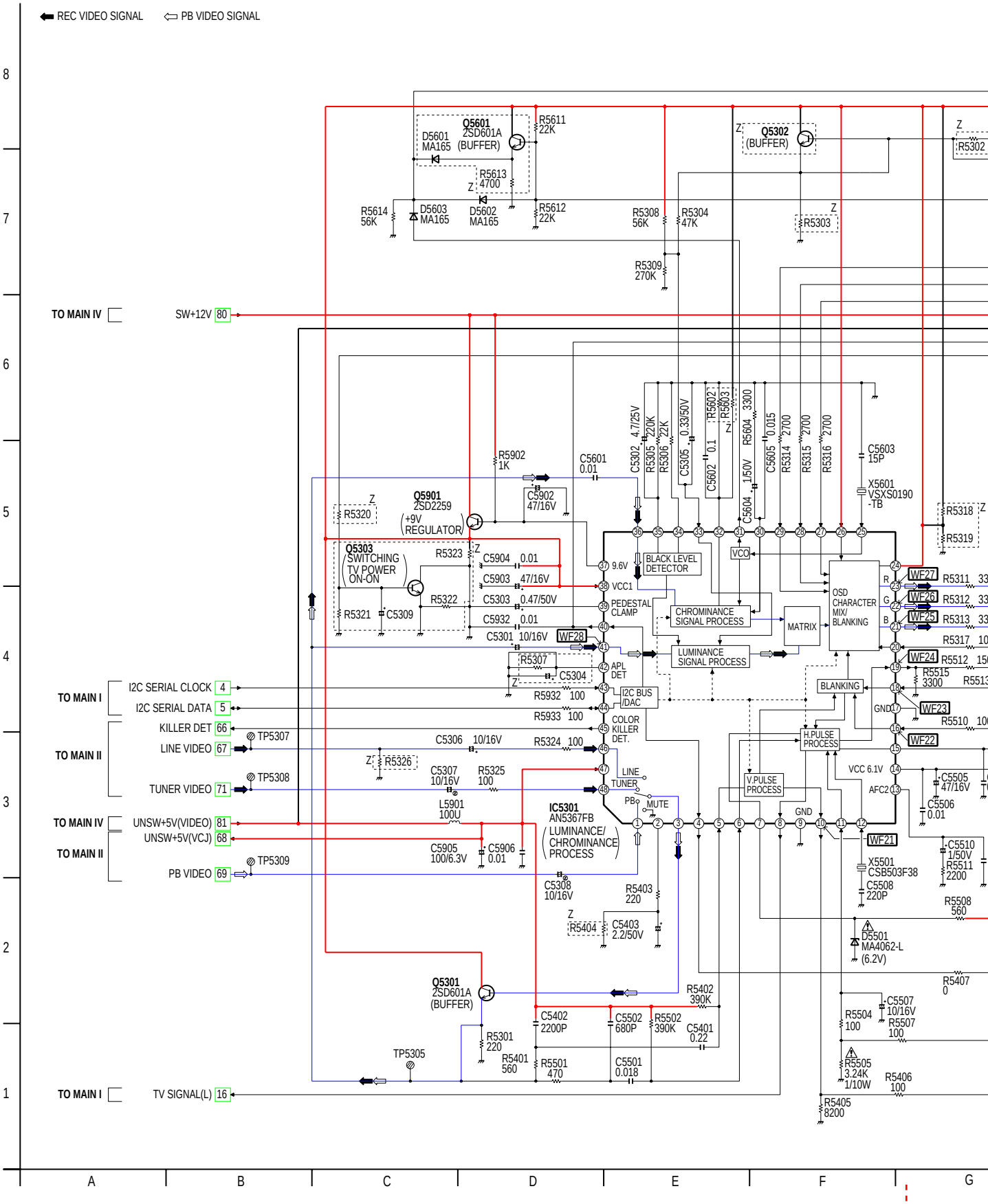
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z



TV/VCR MAIN III (TV Y/C PROCESS) SCHEMATIC DIAGRAM (A)

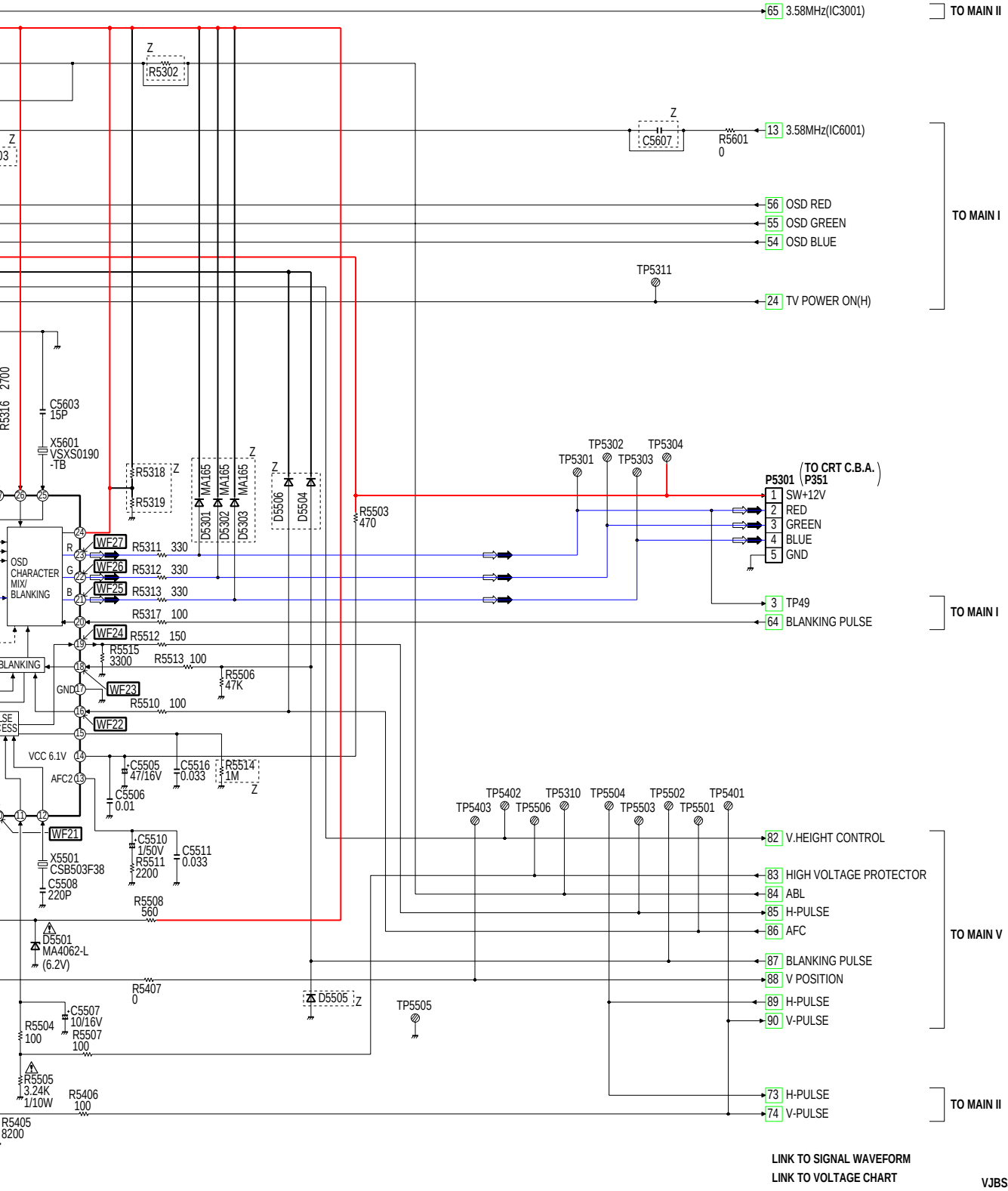


IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z



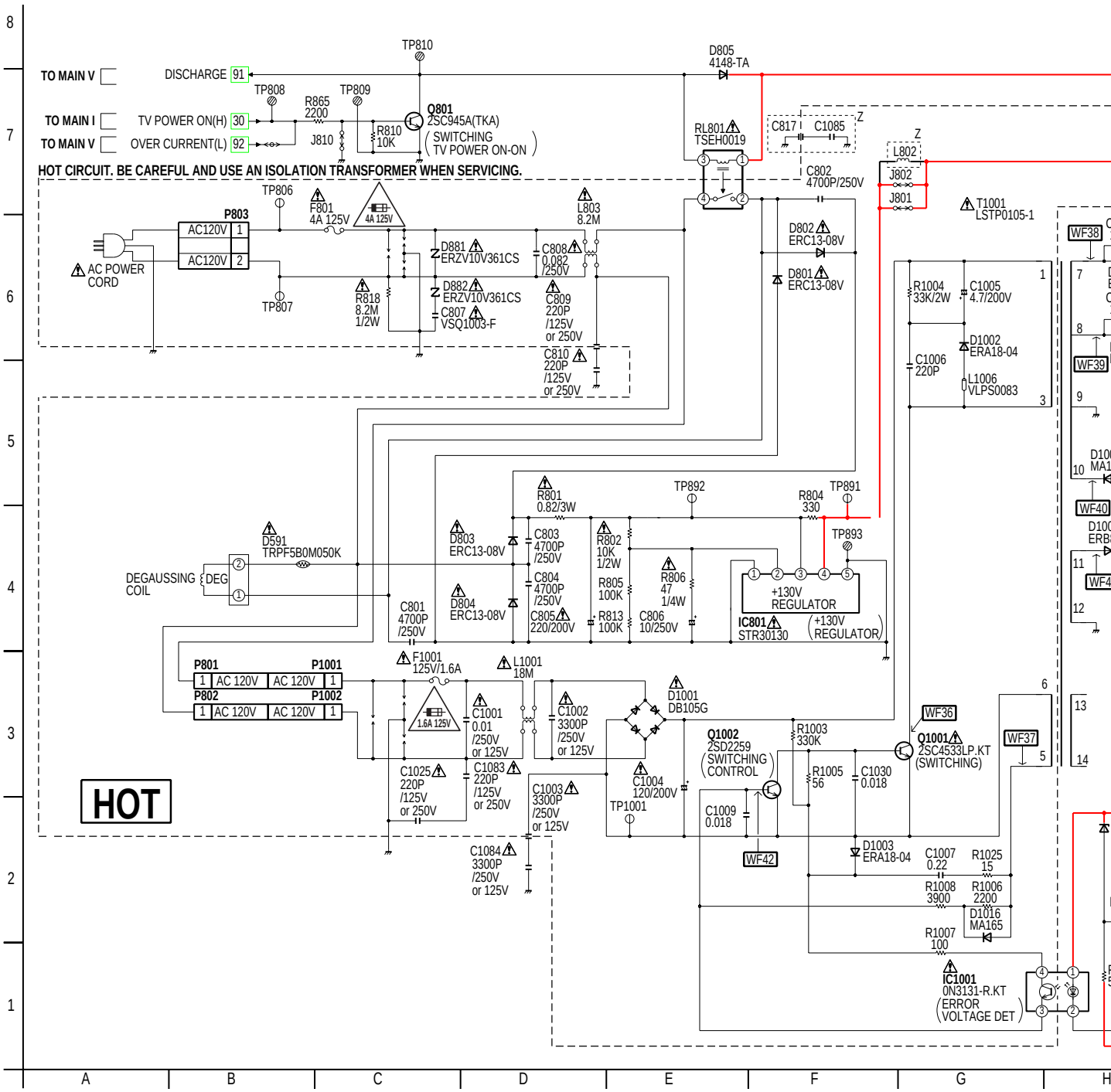
F G H I J K L

AG-513E TV/VCR MAIN III SCHEMATIC DIAGRAM

TV/VCR MAIN IV (POWER SUPPLY) SCHEMATIC DIAGRAM (A)

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 4A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÉME
TYPE 4A 125V

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'T INCENDIE N'I UTILISERQUE DES FUSIBLE DE MÉME
TYPE 1.6A 125V



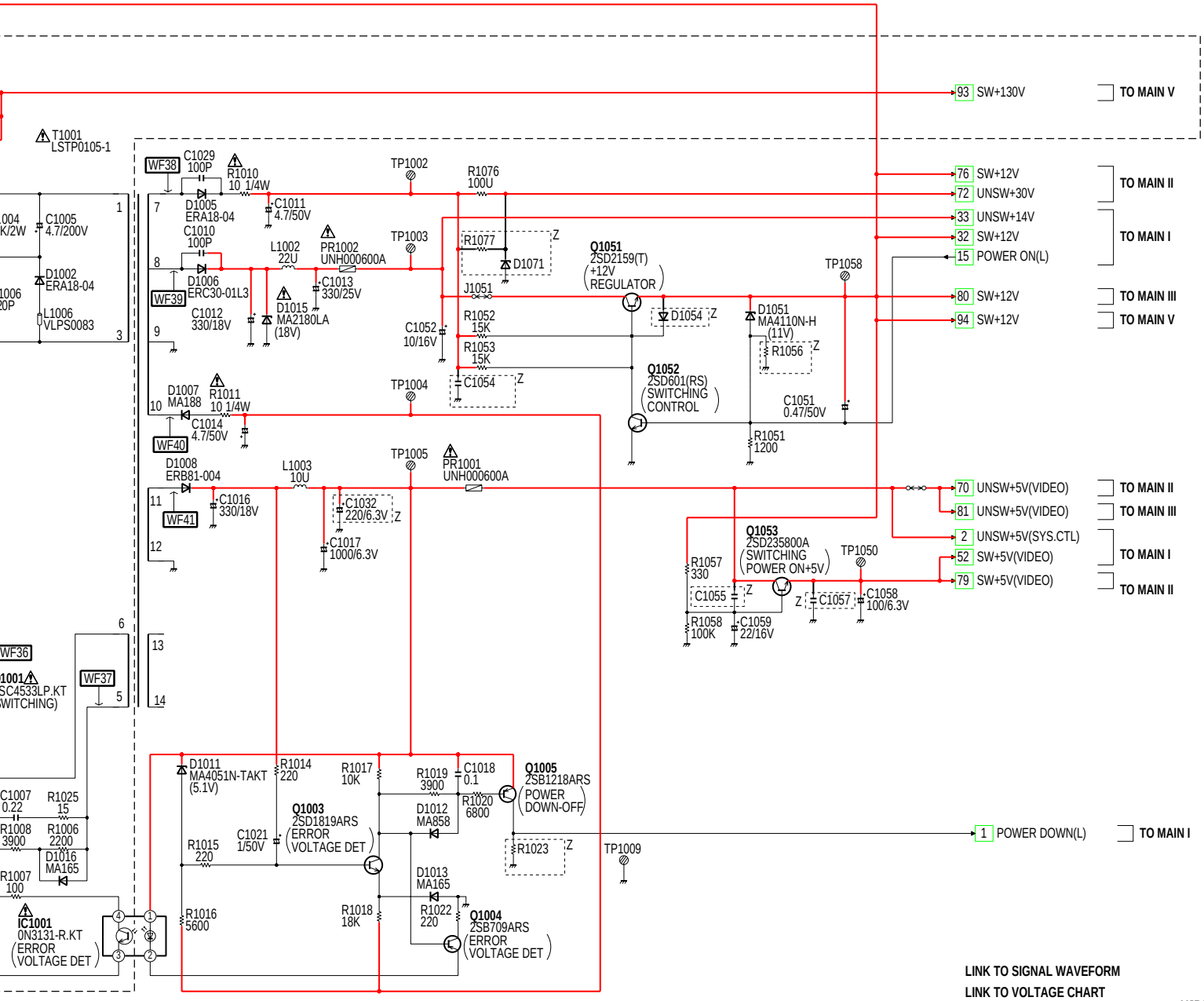
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

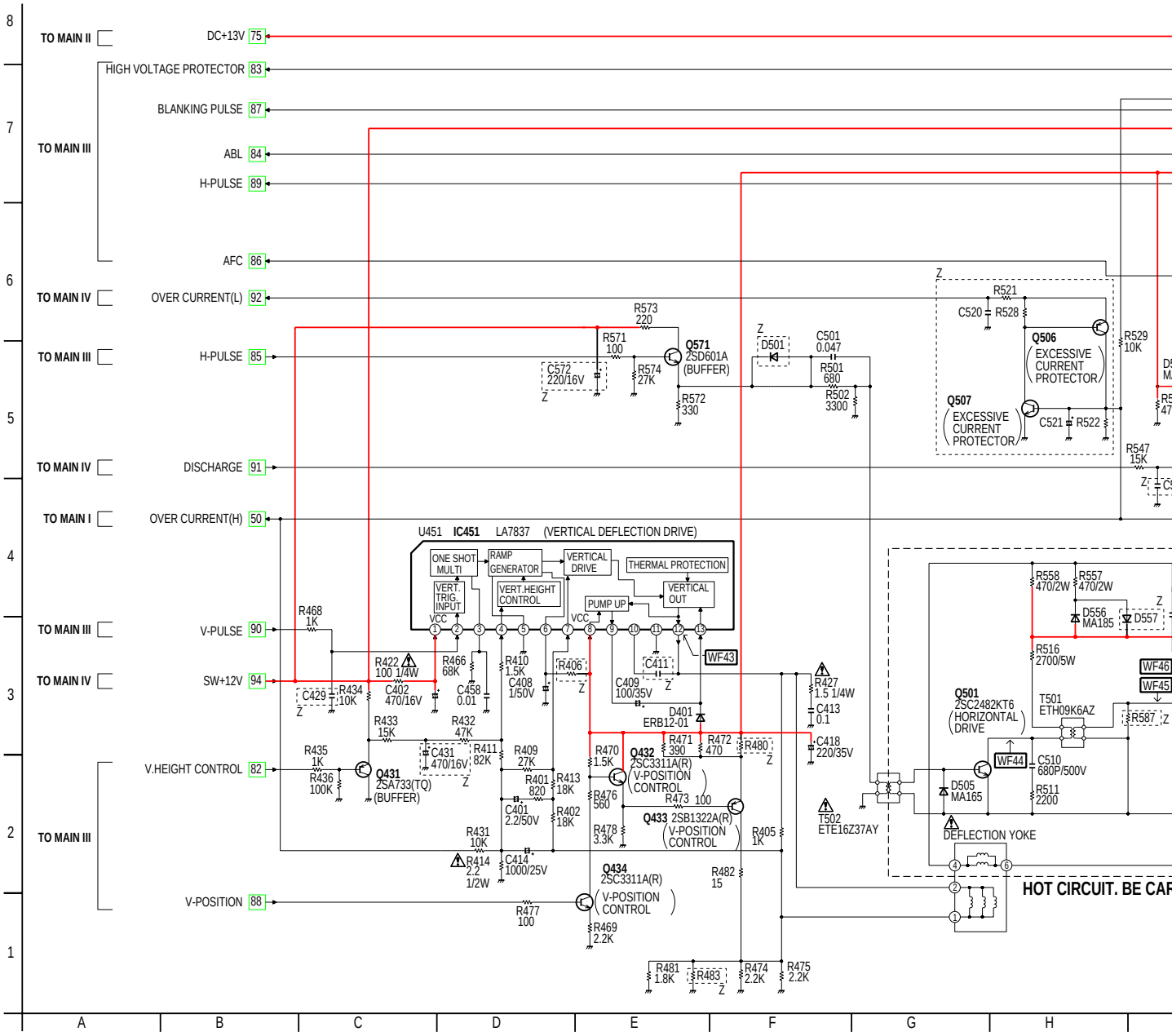
HAZARD,
25V FUSE.
NUE LES RISQUES
DE MÉME

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.



AG-513E TV/VCR MAIN IV SCHEMATIC DIAGRAM

TV/VCR MAIN V (TV) SCHEMATIC DIAGRAM (A)

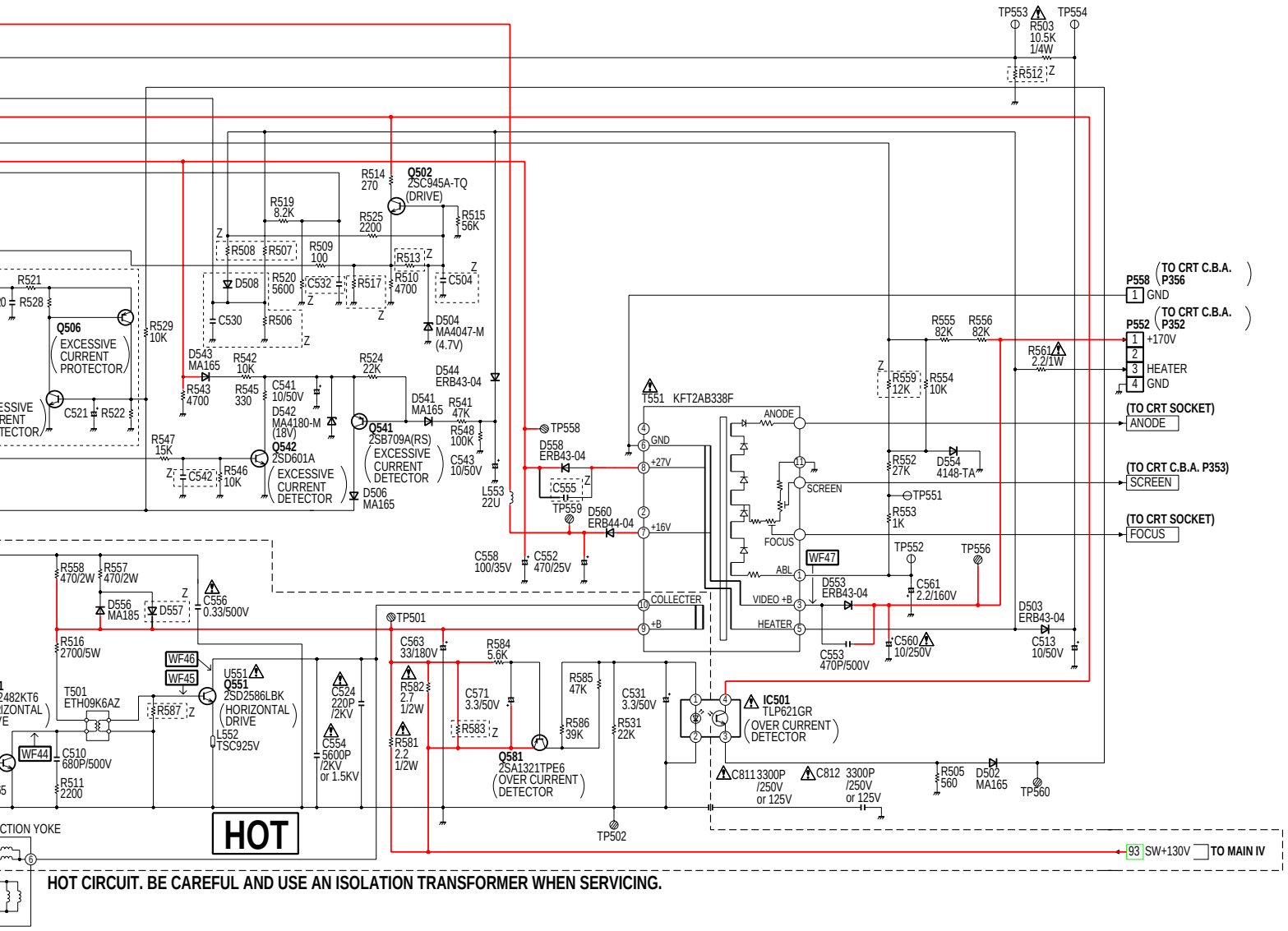


NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



HOT CIRCUIT. BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.

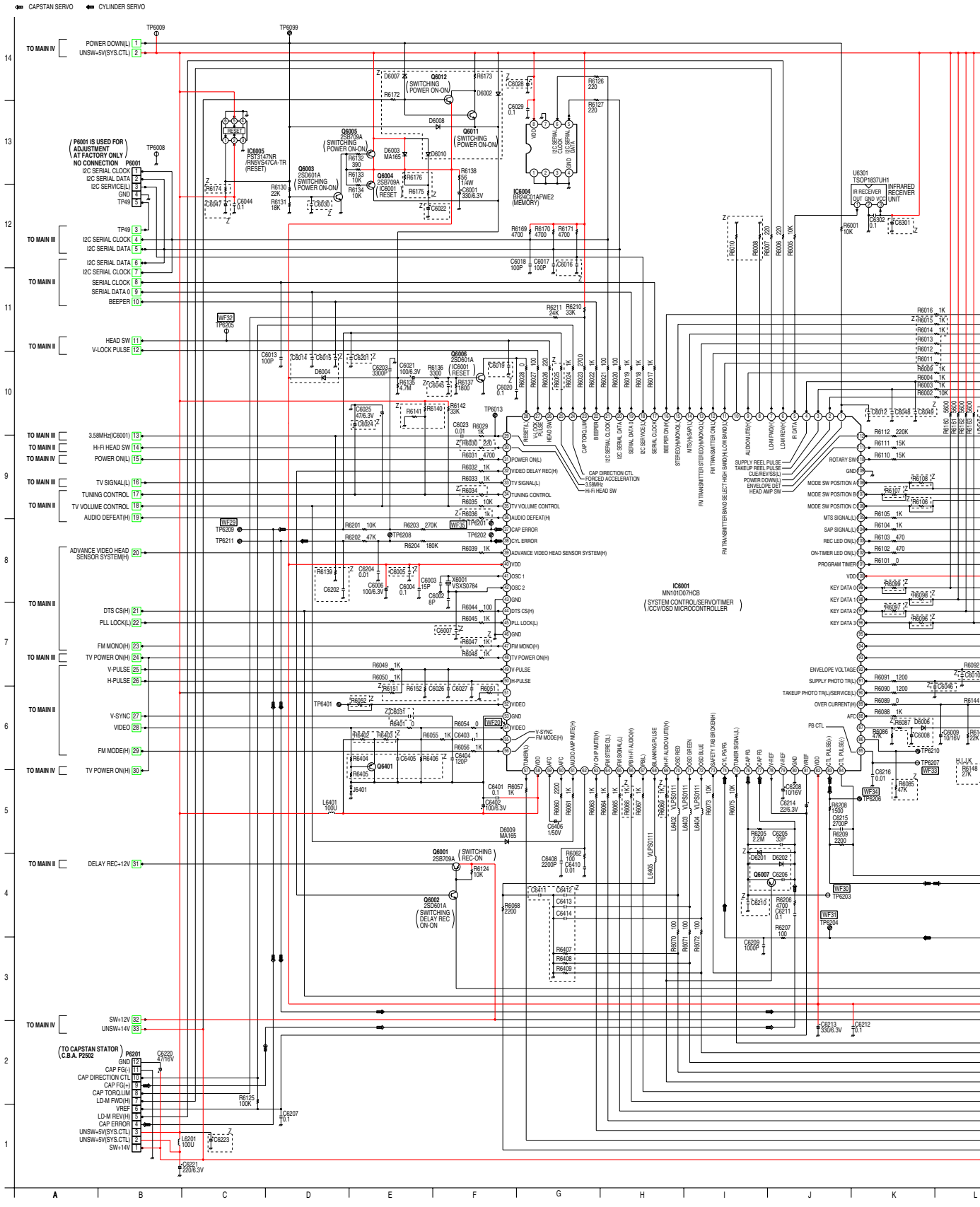
LINK TO SIGNAL WAVEFORM
LINK TO VOLTAGE CHART

VJBS3098

H I J K L M N O P

AG-513E TV/VCR MAIN V SCHEMATIC DIAGRAM

TV/VCR MAIN I (SYSTEM CONTROL/SERVO/CCV/OSD/OPERATION/CYLINDER DRIVE) SCH



DRIVE) SCHEMATIC DIAGRAM (B)

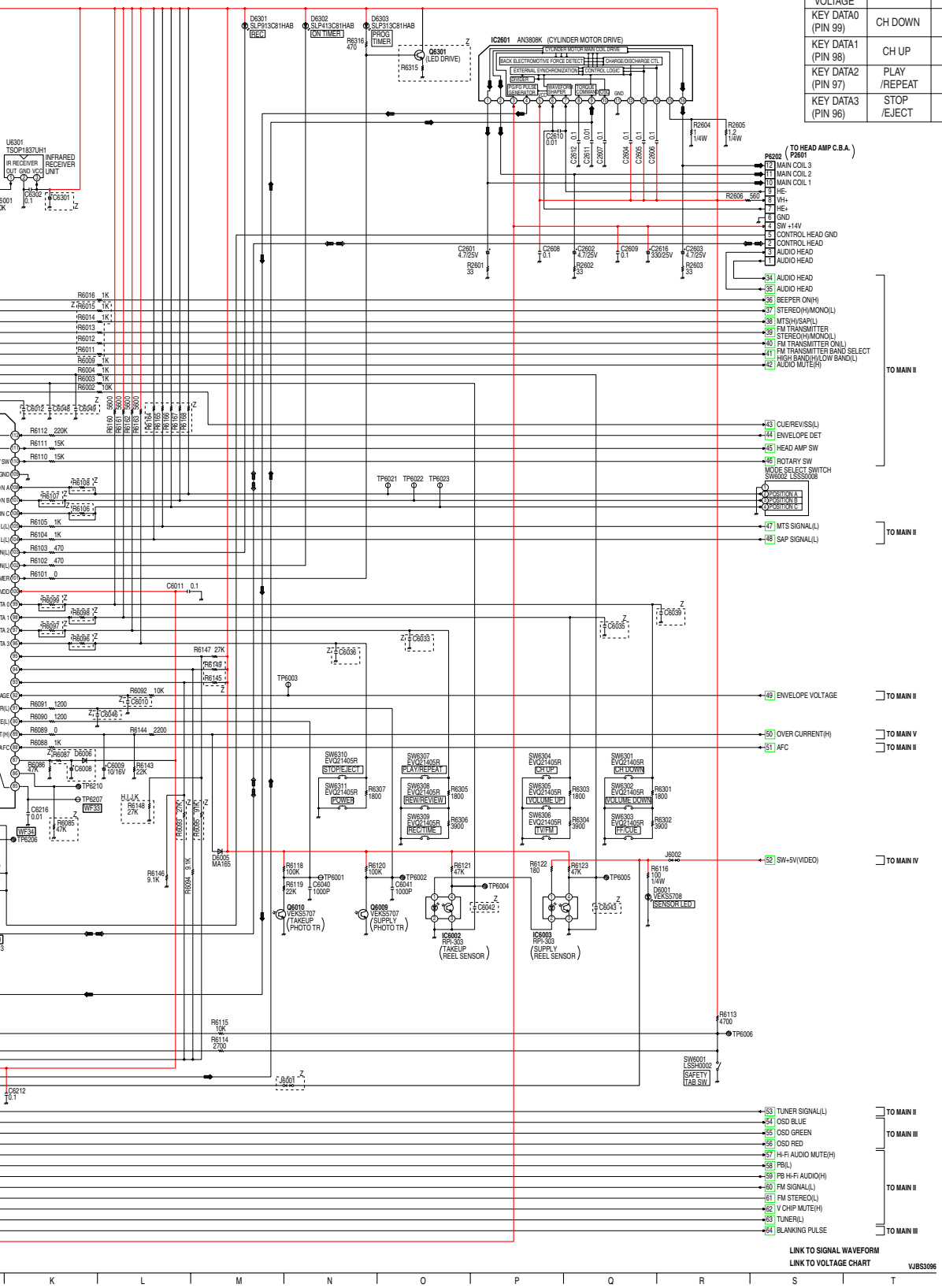
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

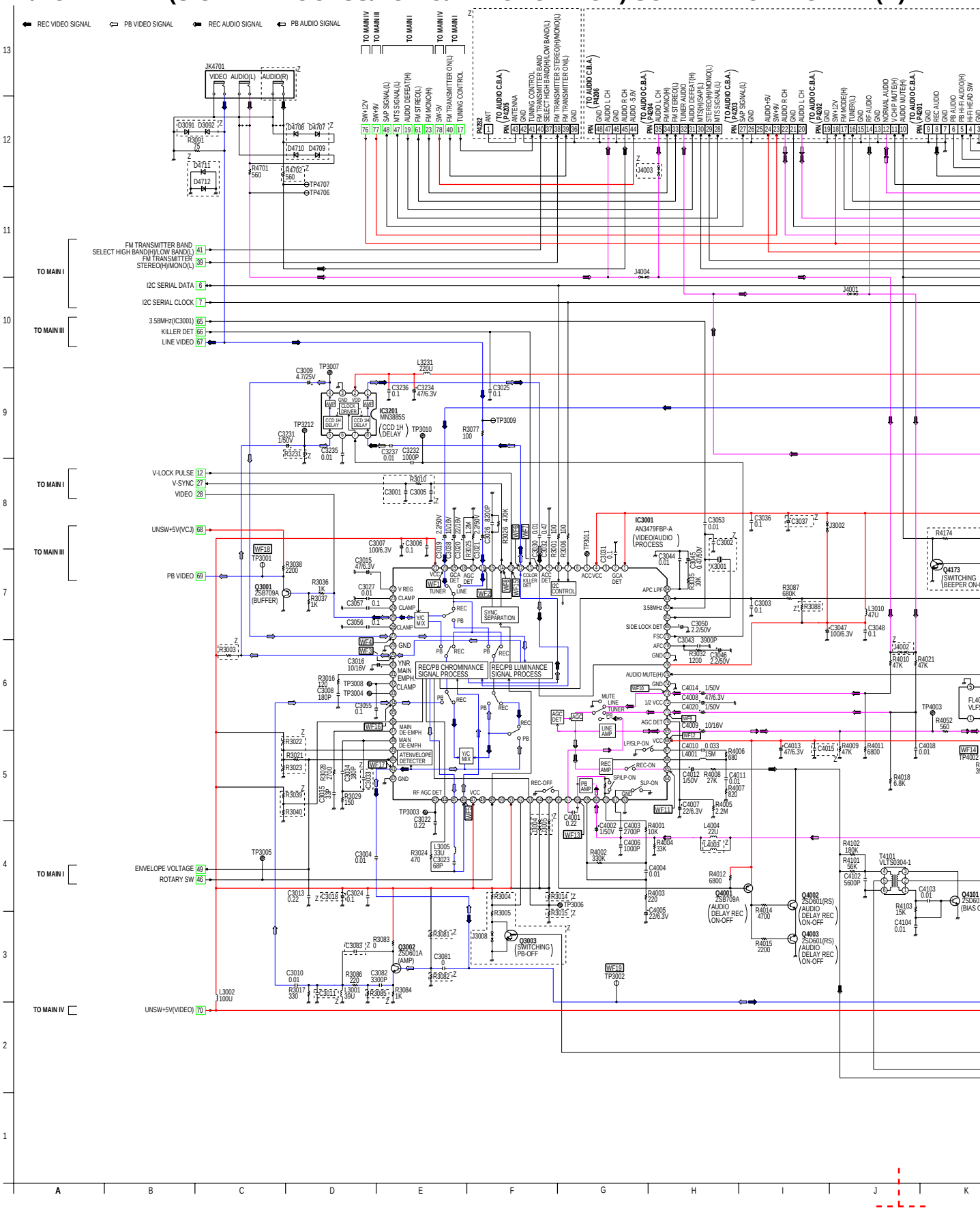
MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

KEY MATRIX CHART

TERMINAL VOLTAGE	0 ~ 0.5V	0.6 ~ 1.8V	1.9 ~ 3.1V
KEY DATA0 (PIN 99)	CH DOWN	VOLUME DOWN	FF/CUE
KEY DATA1 (PIN 98)	CH UP	VOLUME UP	TV/FM
KEY DATA2 (PIN 97)	PLAY /REPEAT	REW/ REVIEW	REC
KEY DATA3 (PIN 96)	STOP /EJECT	POWER	-----



TV/VCR MAIN II (SIGNAL PROCESS/AUDIO/DEMODULATOR) SCHEMATIC DIAGRAM (B)



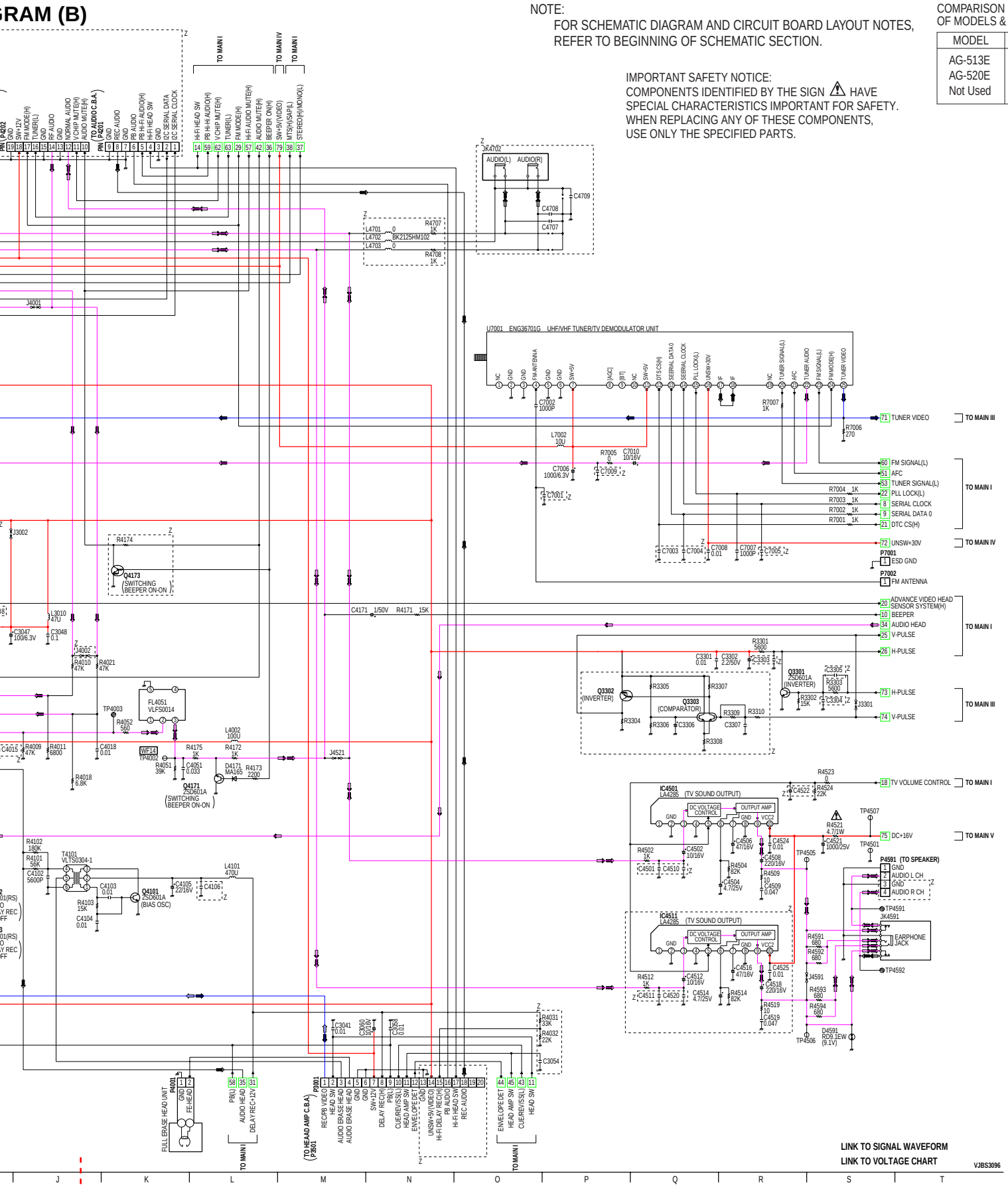
GRAM (B)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

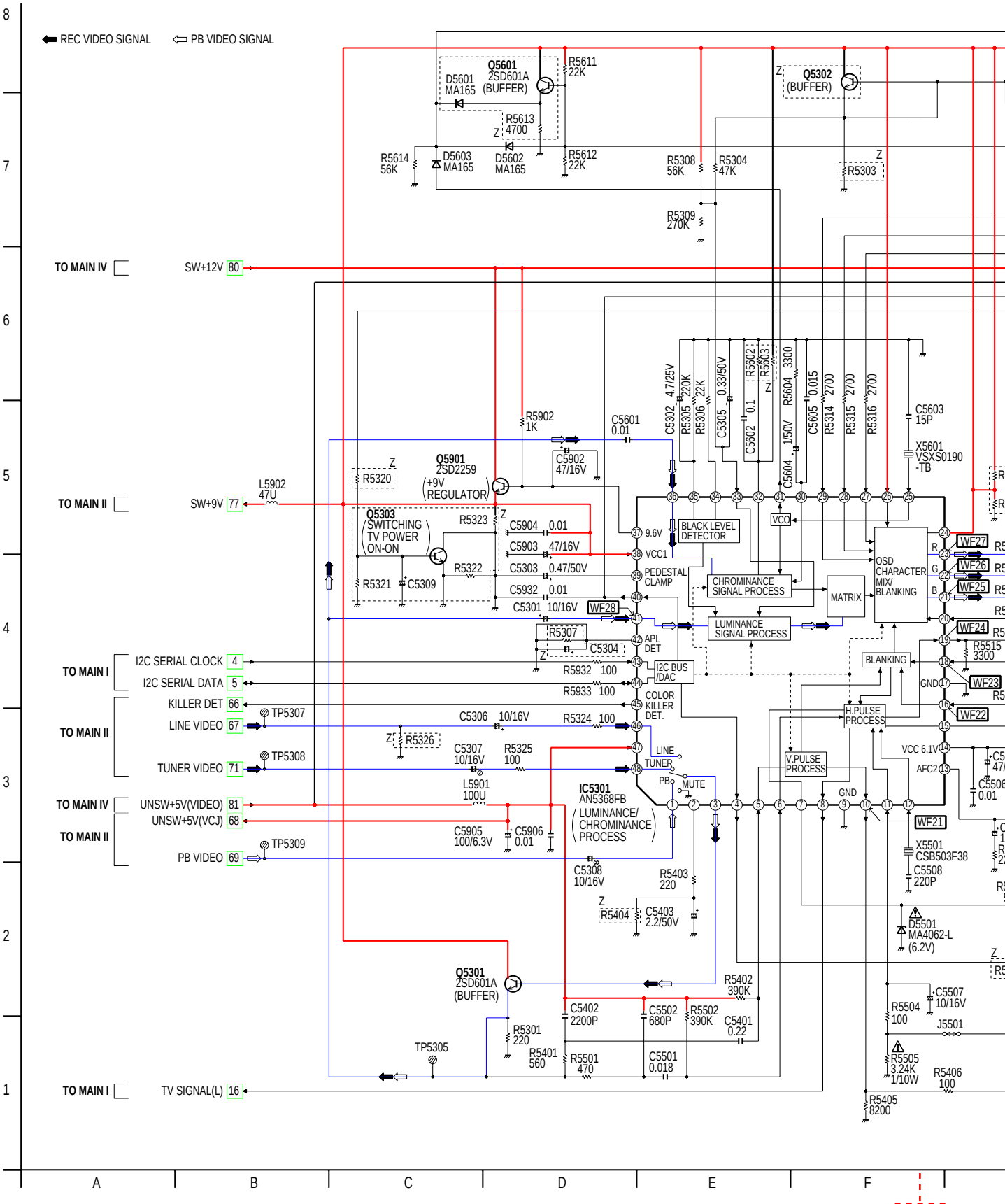
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

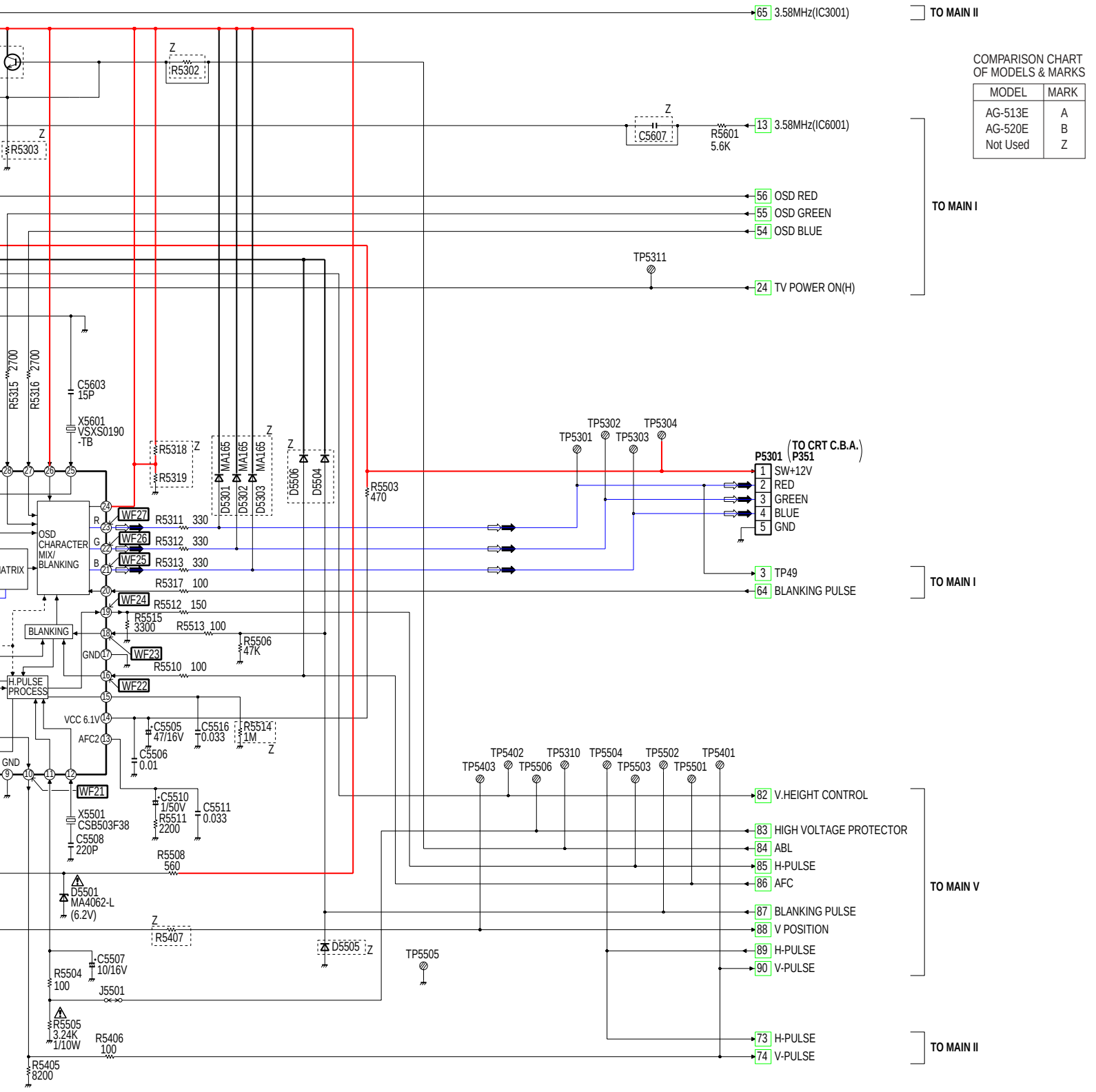


TV/VCR MAIN III (TV Y/C PROCESS) SCHEMATIC DIAGRAM (B)



IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.



LINK TO SIGNAL WAVEFORM
LINK TO VOLTAGE CHART

VJBS3096

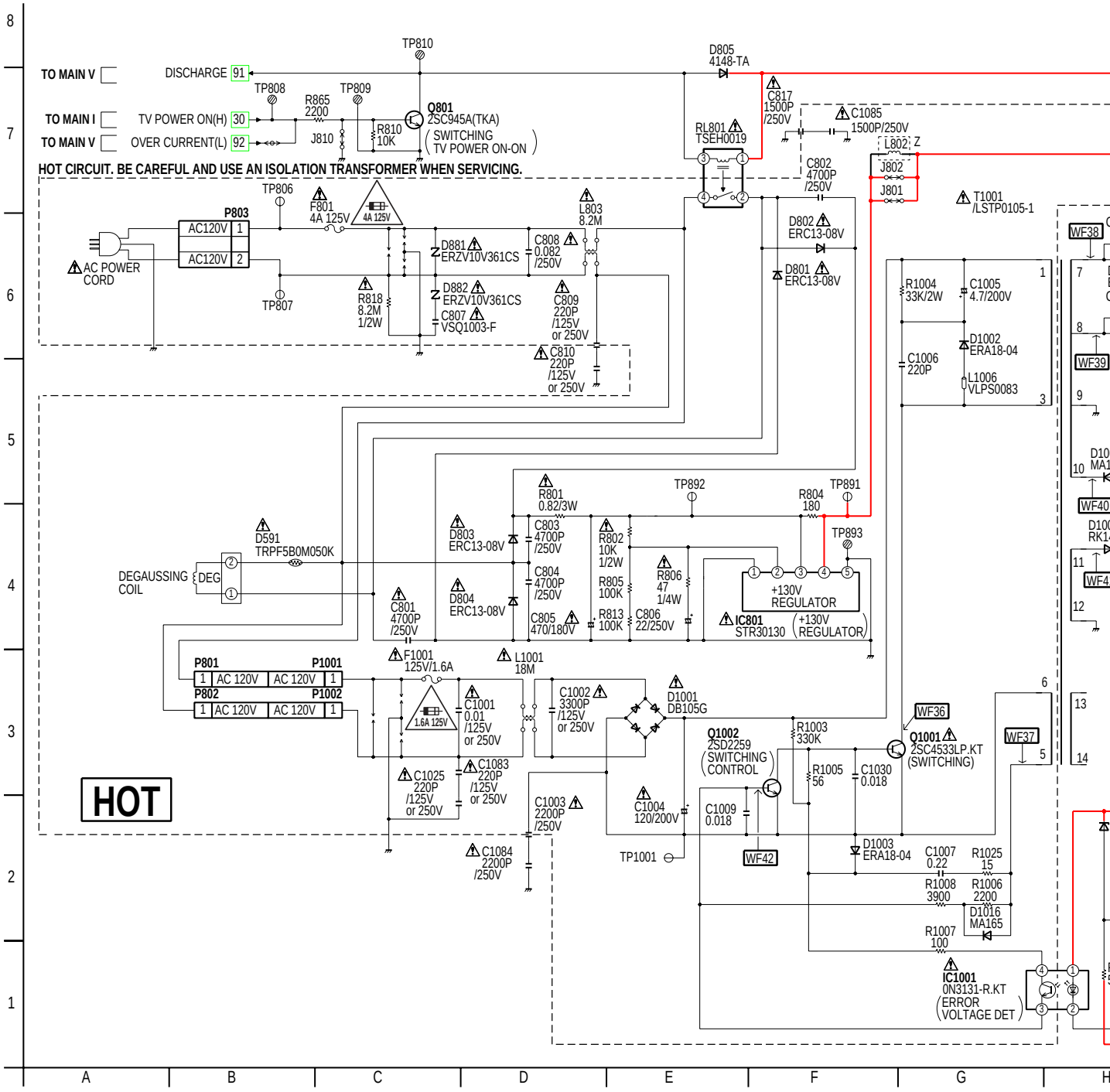
F G H I J K L

AG-520E TV/VCR MAIN III SCHEMATIC DIAGRAM

TV/VCR MAIN IV (POWER SUPPLY) SCHEMATIC DIAGRAM (B)

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 4A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÉME
TYPE 4A 125V

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'T INCENDIE N'I UTILISERQUE DES FUSIBLE DE MÉME
TYPE 1.6A 125V



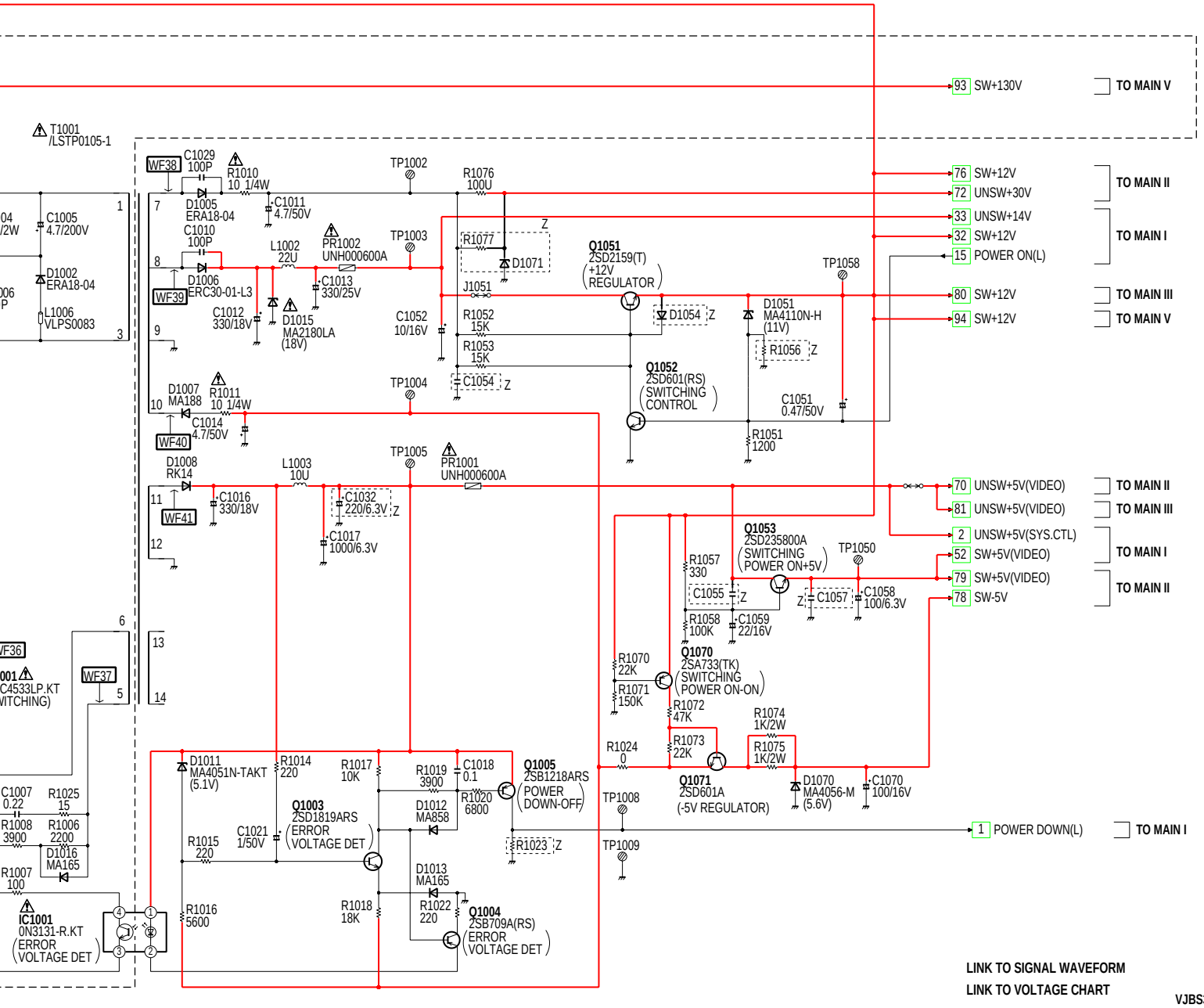
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

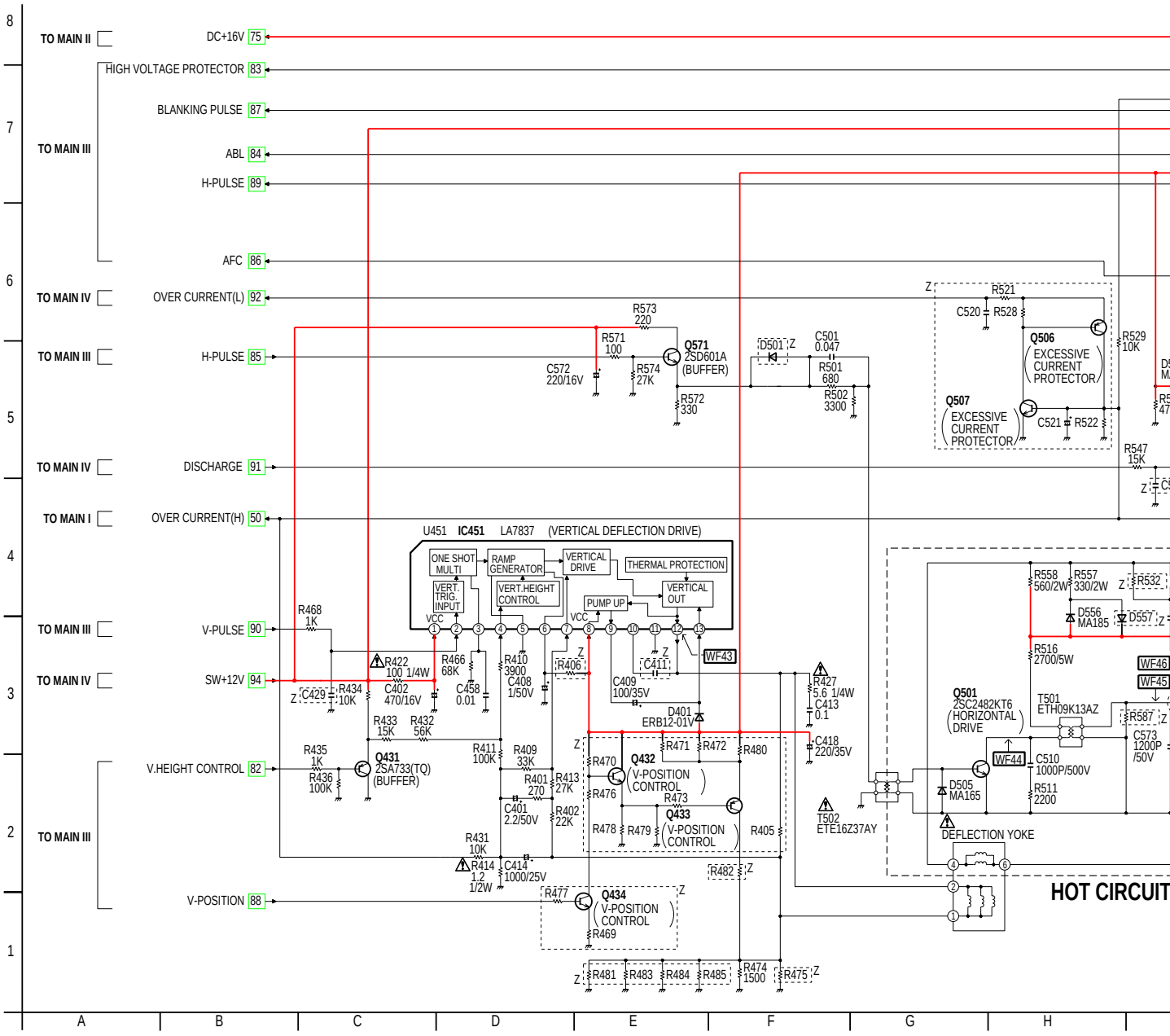
MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

ZARD,
FUSE.
LES RISQUES
MÉME

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



TV/VCR MAIN V (TV) SCHEMATIC DIAGRAM (B)

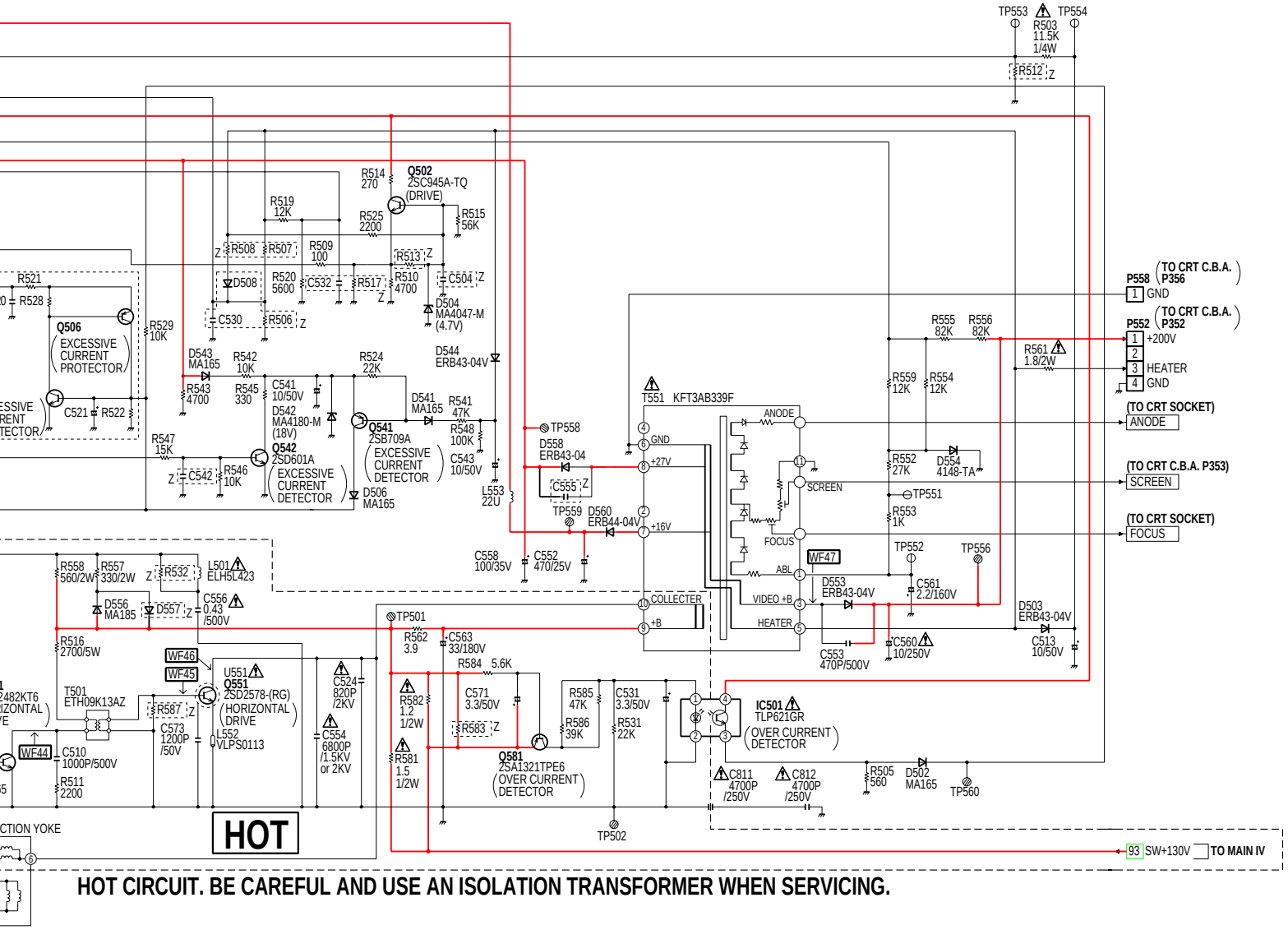


NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



HOT CIRCUIT. BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.

LINK TO SIGNAL WAVEFORM
LINK TO VOLTAGE CHART

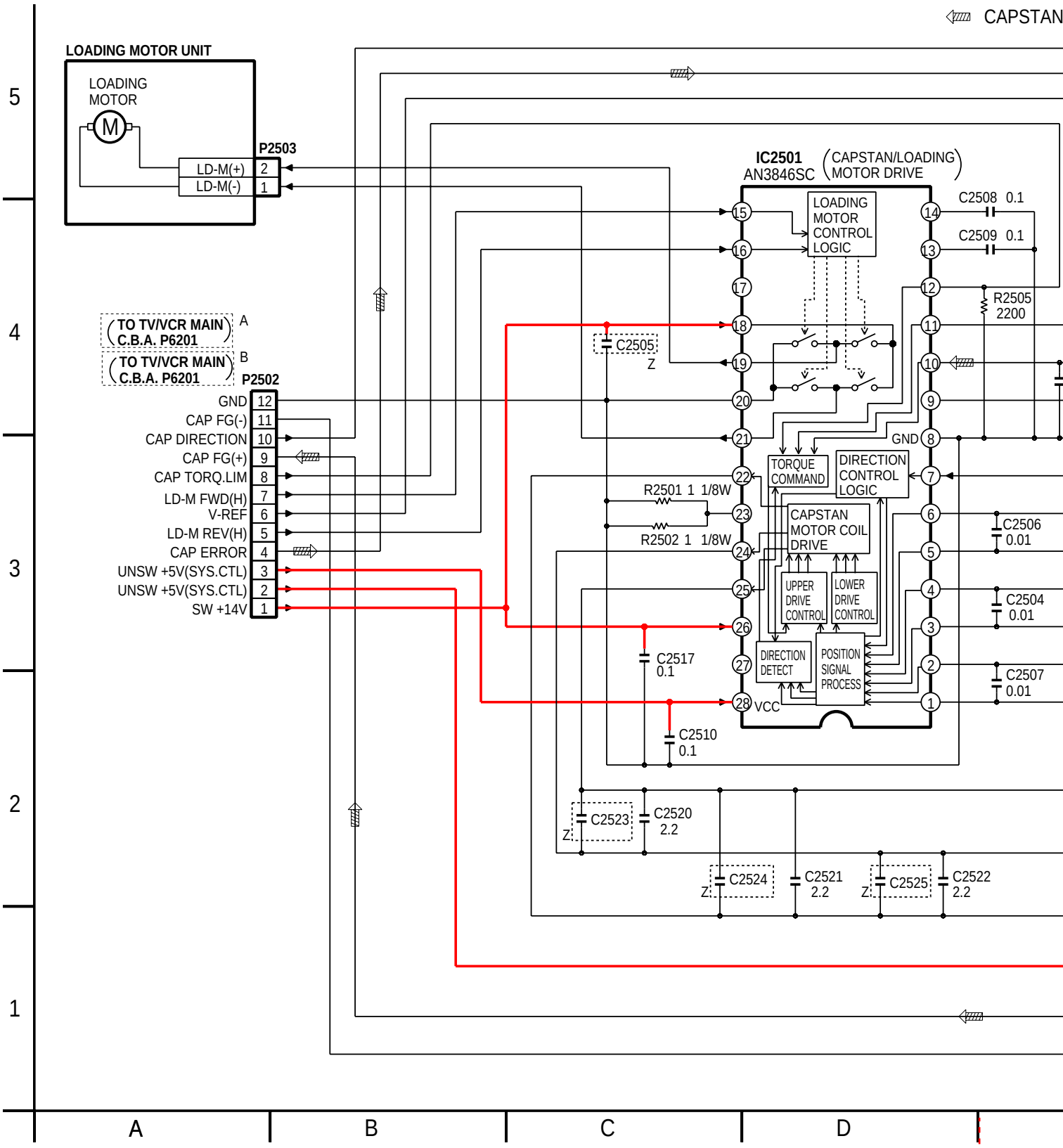
VJBS3096

H I J K L M N O P

AG-520E TV/VCR MAIN V SCHEMATIC DIAGRAM

8.3. CAPSTAN STATOR SCHEMATIC DIAGRAM

CAPSTAN STATOR SCHEMATIC DIAGRAM



NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

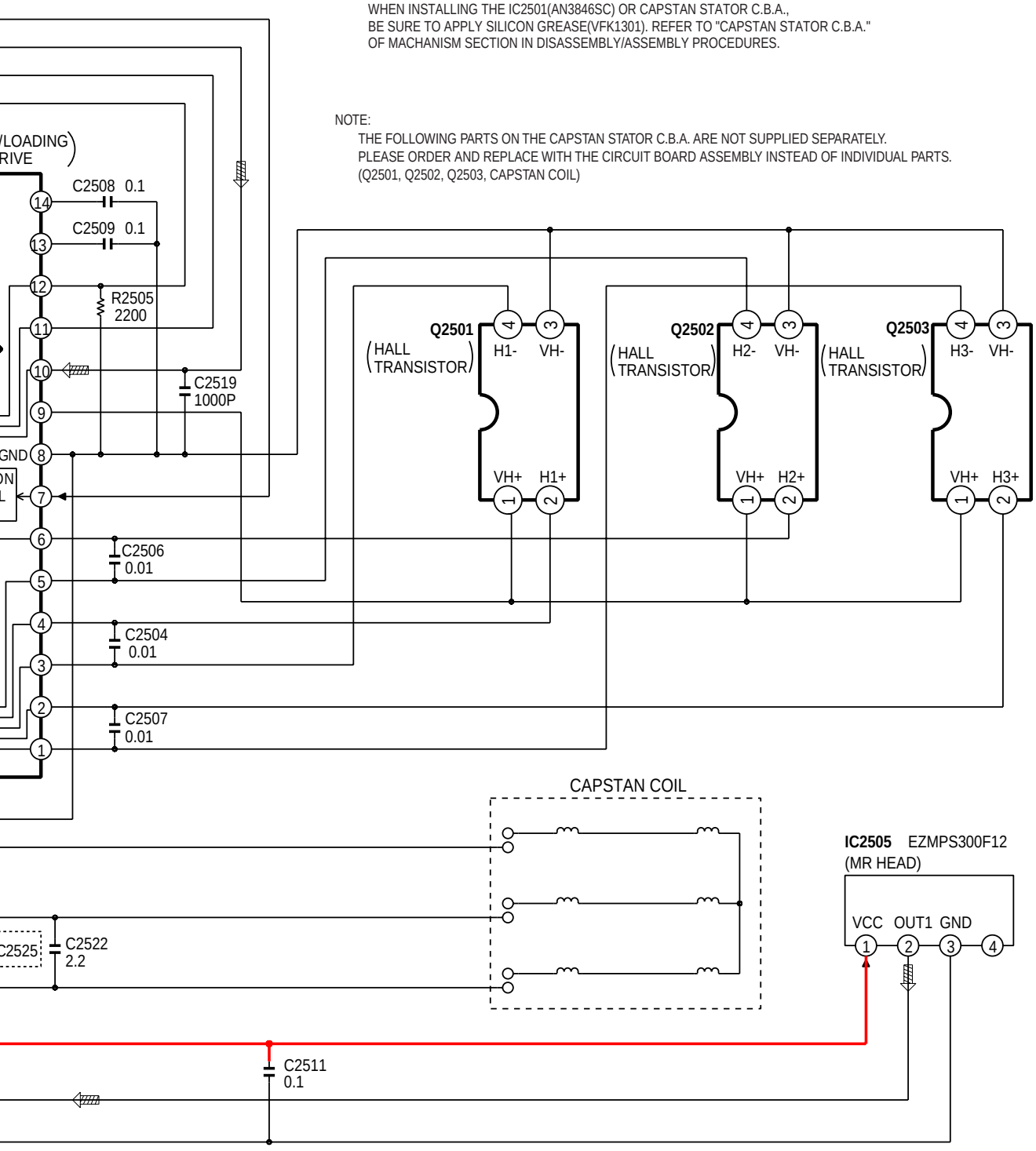
COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

CAPSTAN SERVO

NOTE:
WHEN INSTALLING THE IC2501(AN3846SC) OR CAPSTAN STATOR C.B.A.,
BE SURE TO APPLY SILICON GREASE(VFK1301). REFER TO "CAPSTAN STATOR C.B.A."
OF MACHANISM SECTION IN DISASSEMBLY/ASSEMBLY PROCEDURES.

NOTE:
THE FOLLOWING PARTS ON THE CAPSTAN STATOR C.B.A. ARE NOT SUPPLIED SEPARATELY.
PLEASE ORDER AND REPLACE WITH THE CIRCUIT BOARD ASSEMBLY INSTEAD OF INDIVIDUAL PARTS.
(Q2501, Q2502, Q2503, CAPSTAN COIL)



LINK TO VOLTAGE CHART

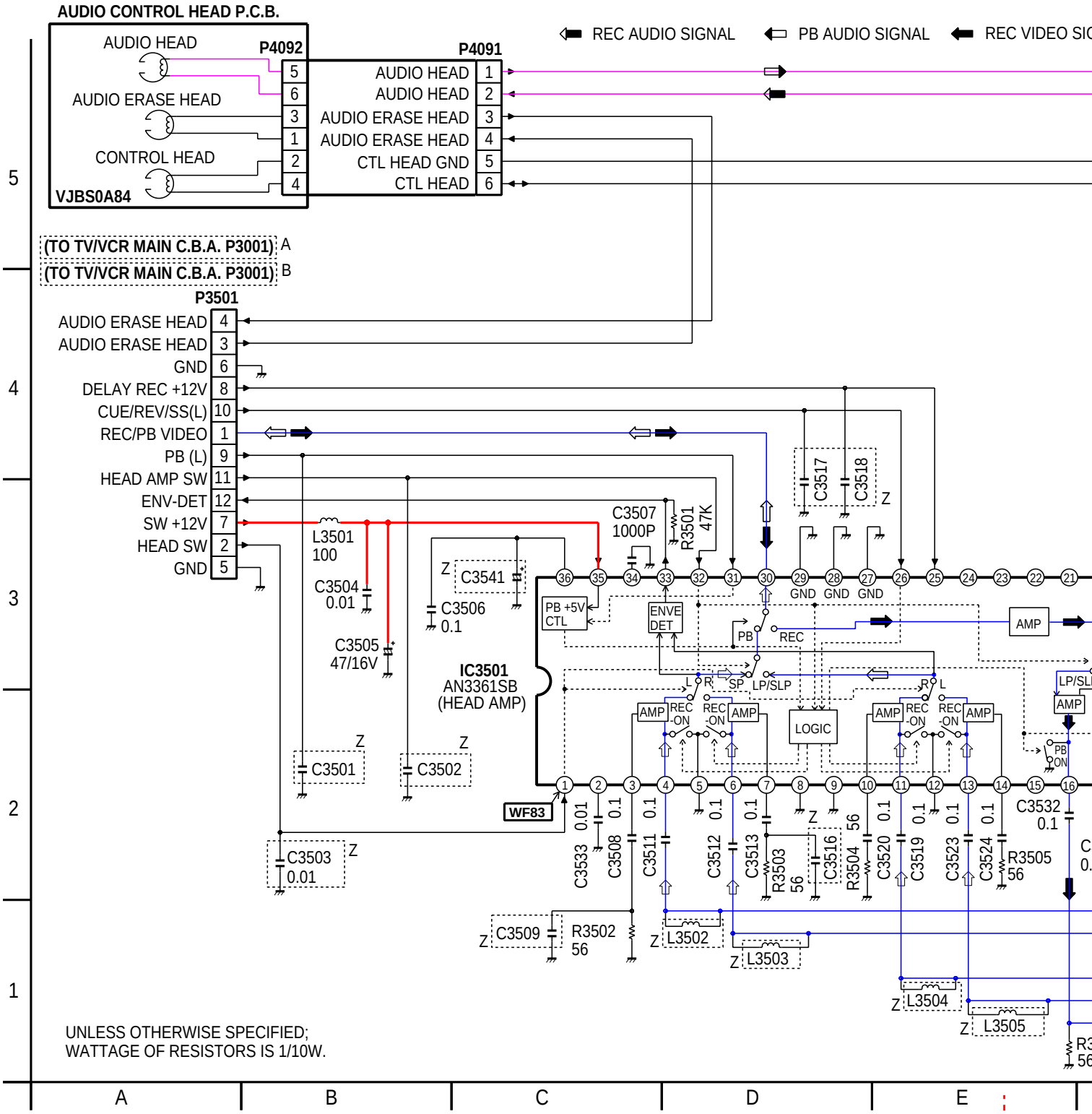
VJBS2007

E F G H

AG-513E/AG-520E CAPSTAN STATOR SCHEMATIC DIAGRAM

8.4. HEAD AMP SCHEMATIC DIAGRAM

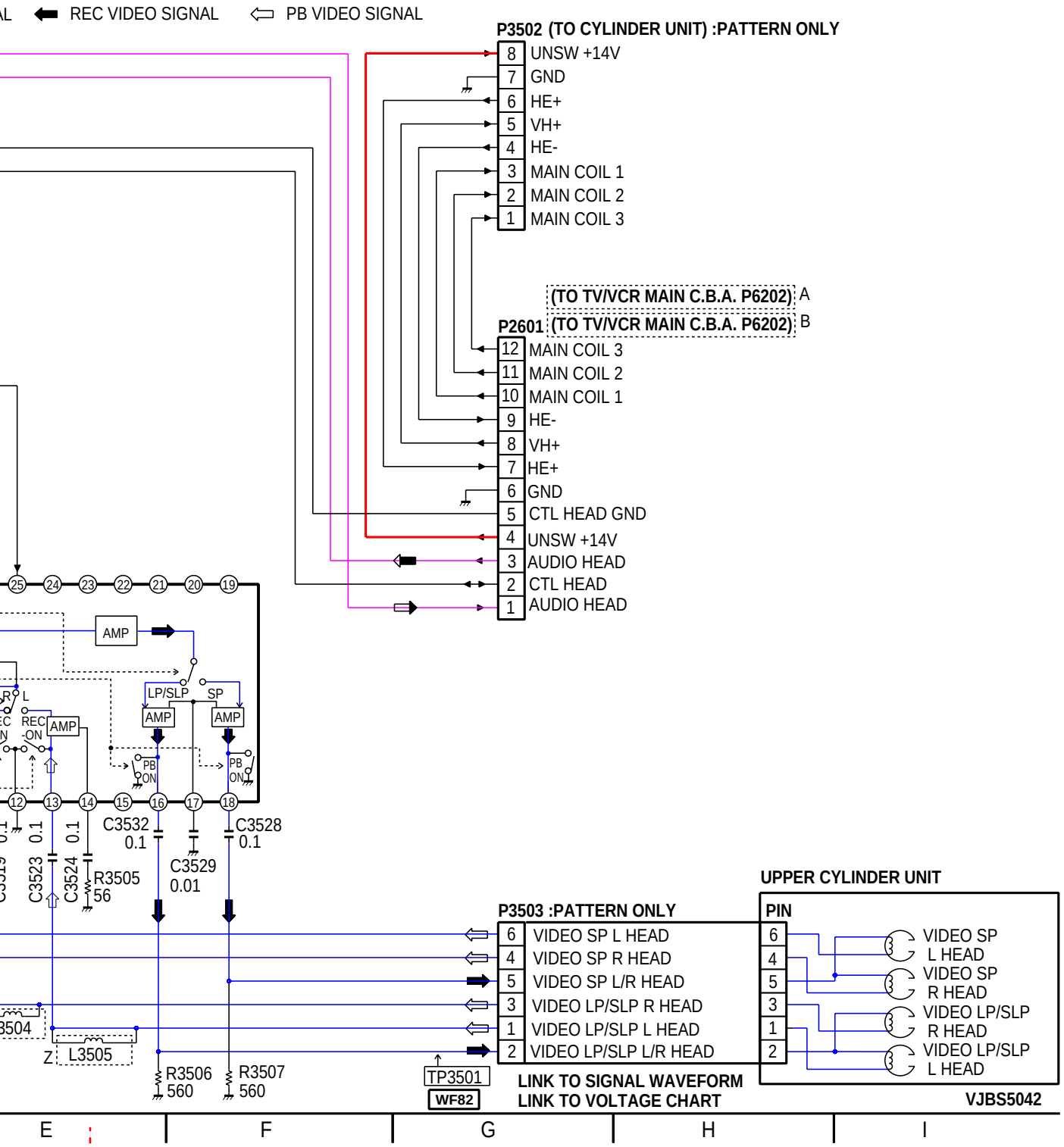
HEAD AMP SCHEMATIC DIAGRAM



NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

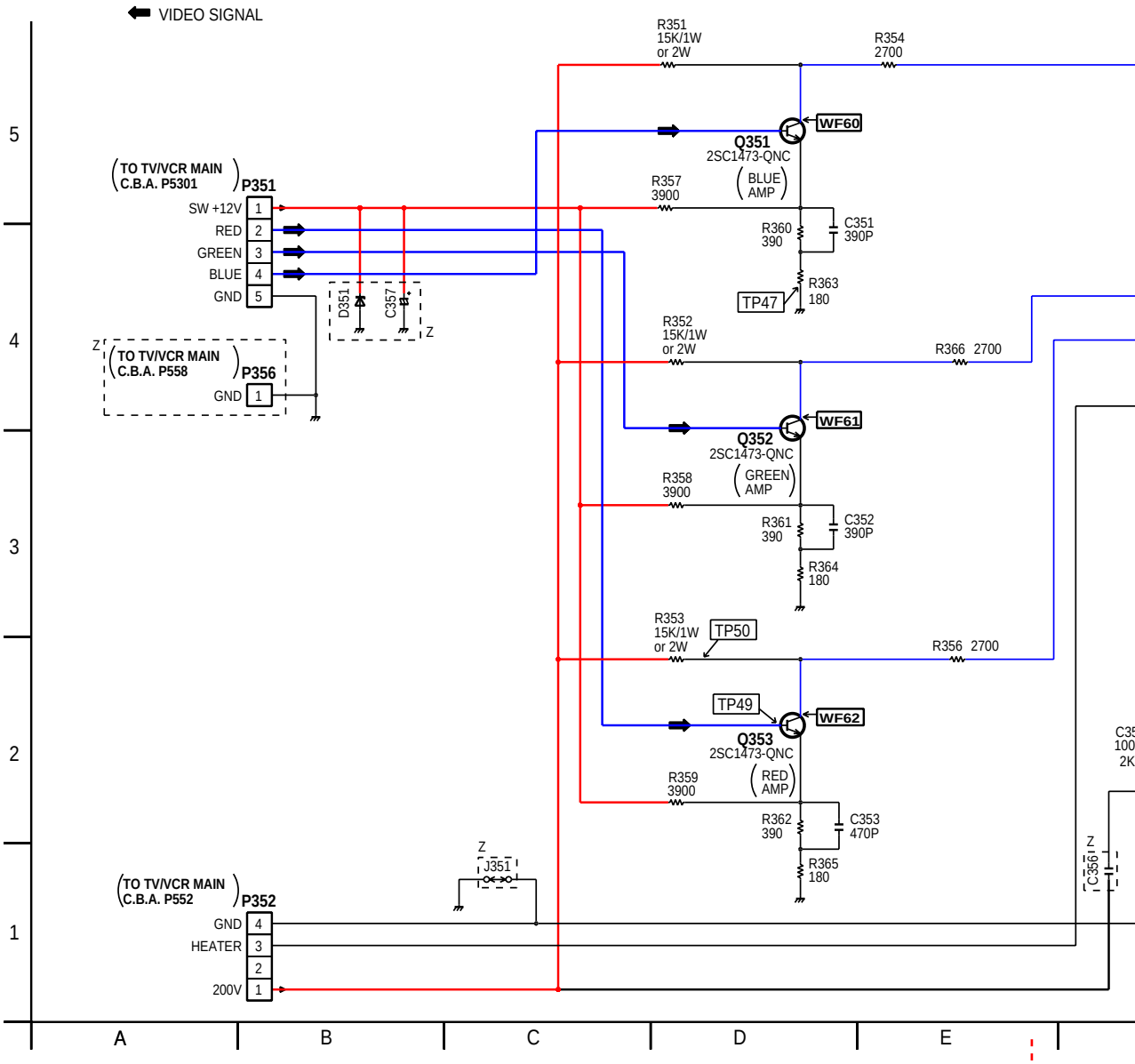


AG-513E/AG-520E HEAD AMP SCHEMATIC DIAGRAM

8.5. CRT SCHEMATIC DIAGRAM

(Model: AG-513E)

CRT SCHEMATIC DIAGRAM (A)

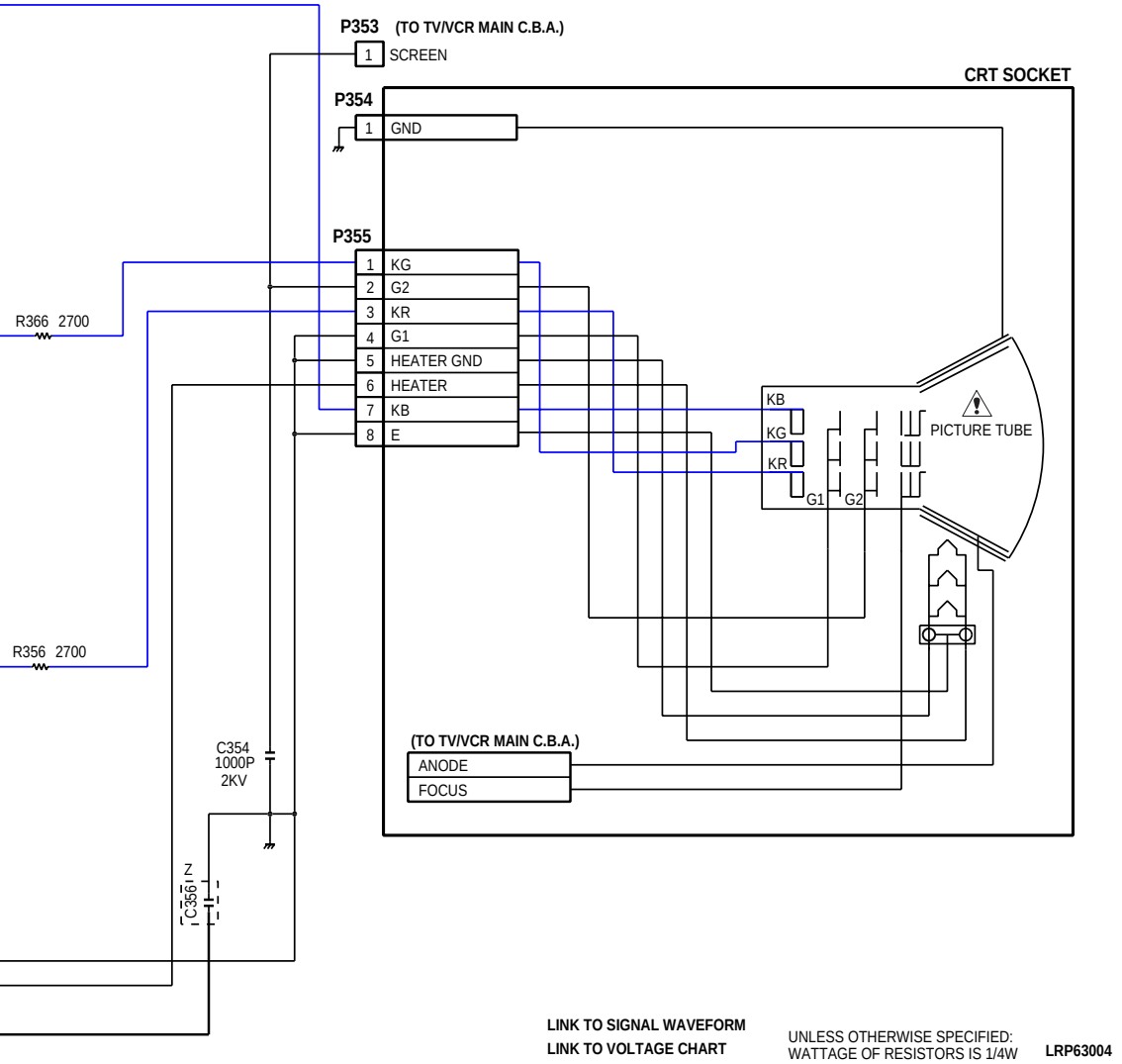


IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z



LINK TO SIGNAL WAVEFORM
LINK TO VOLTAGE CHART

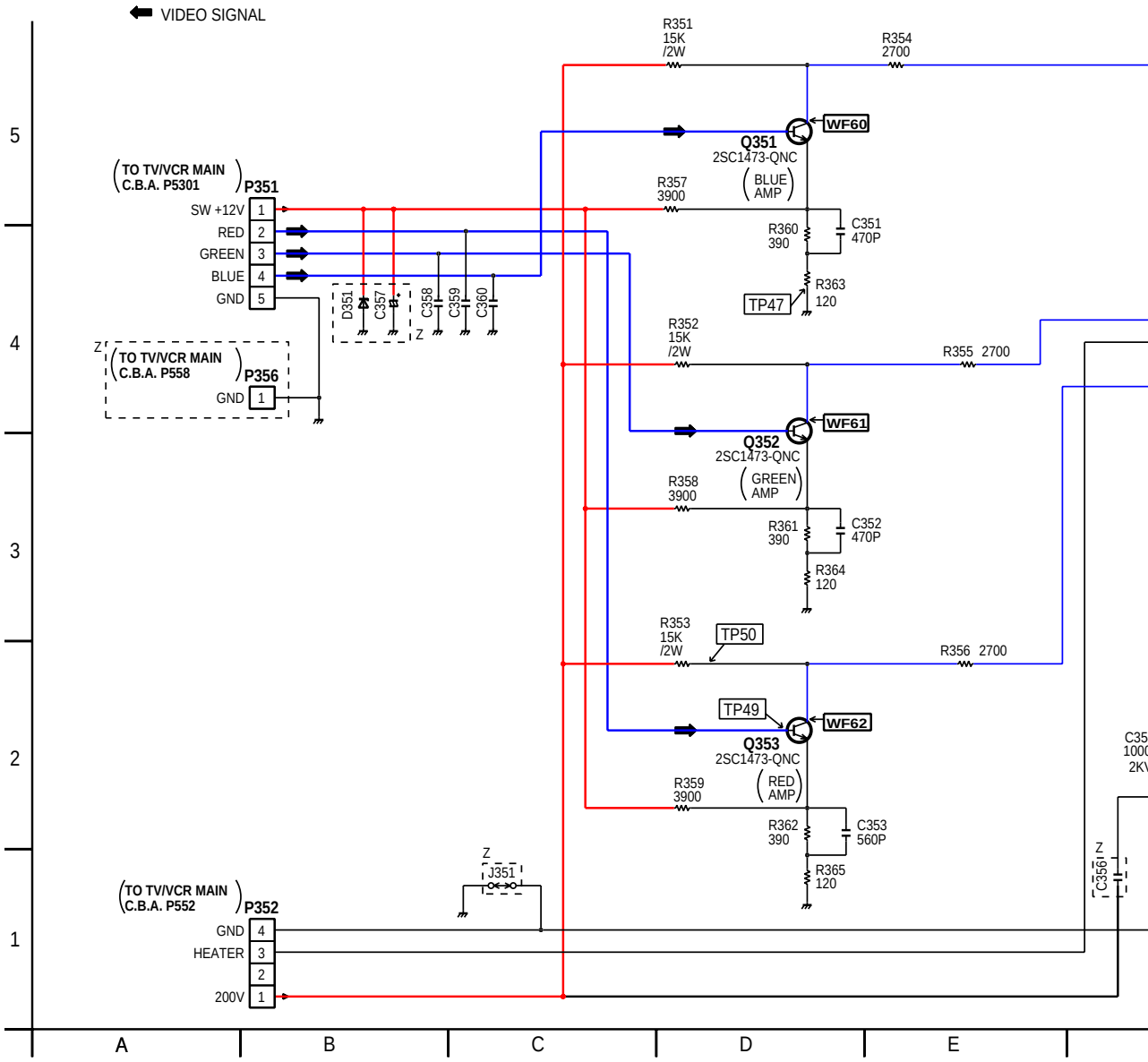
UNLESS OTHERWISE SPECIFIED:
WATTAGE OF RESISTORS IS 1/4W

LRP63004

E F G H I

AG-513E CRT SCHEMATIC DIAGRAM

CRT SCHEMATIC DIAGRAM (B)

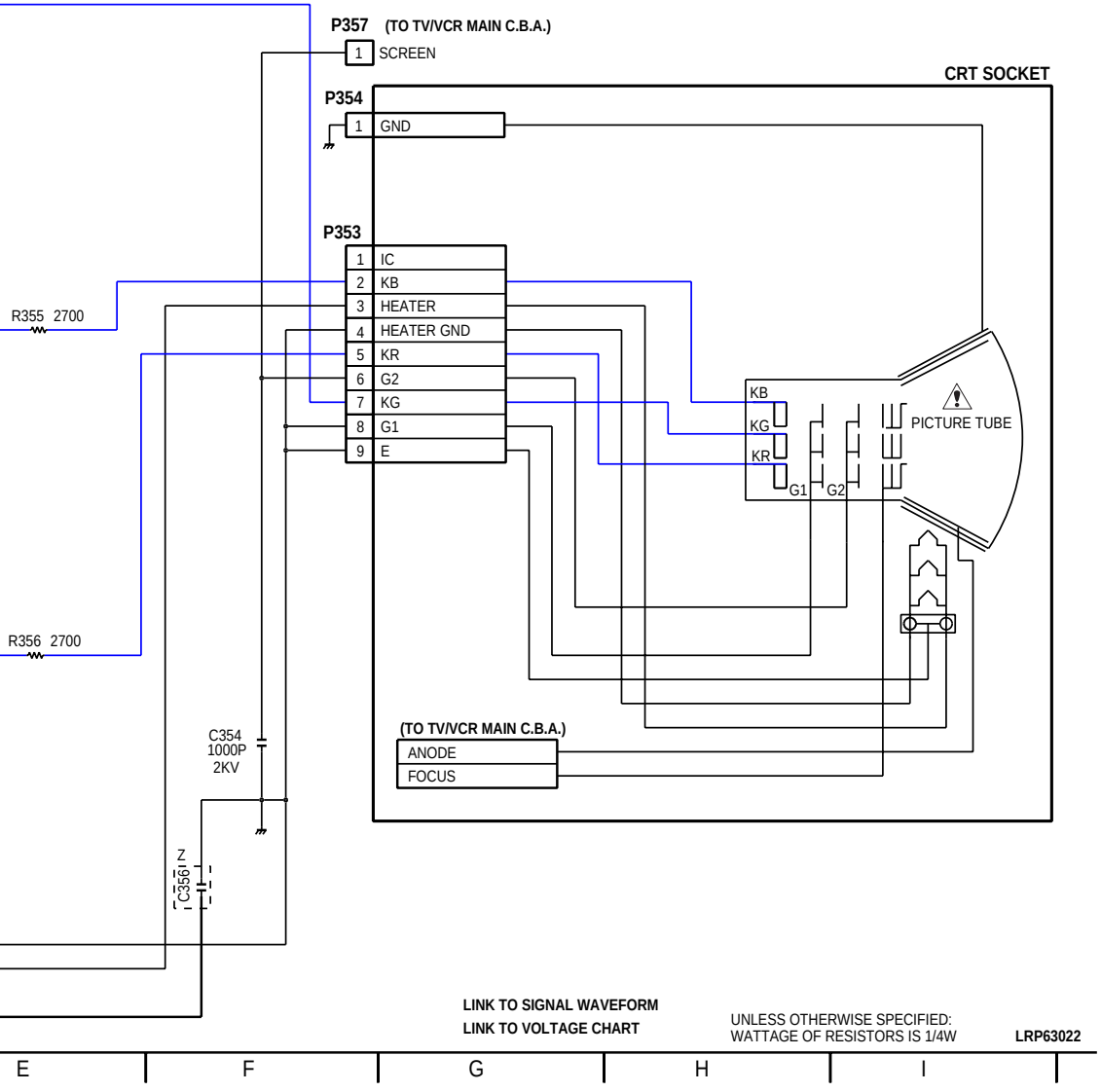


IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

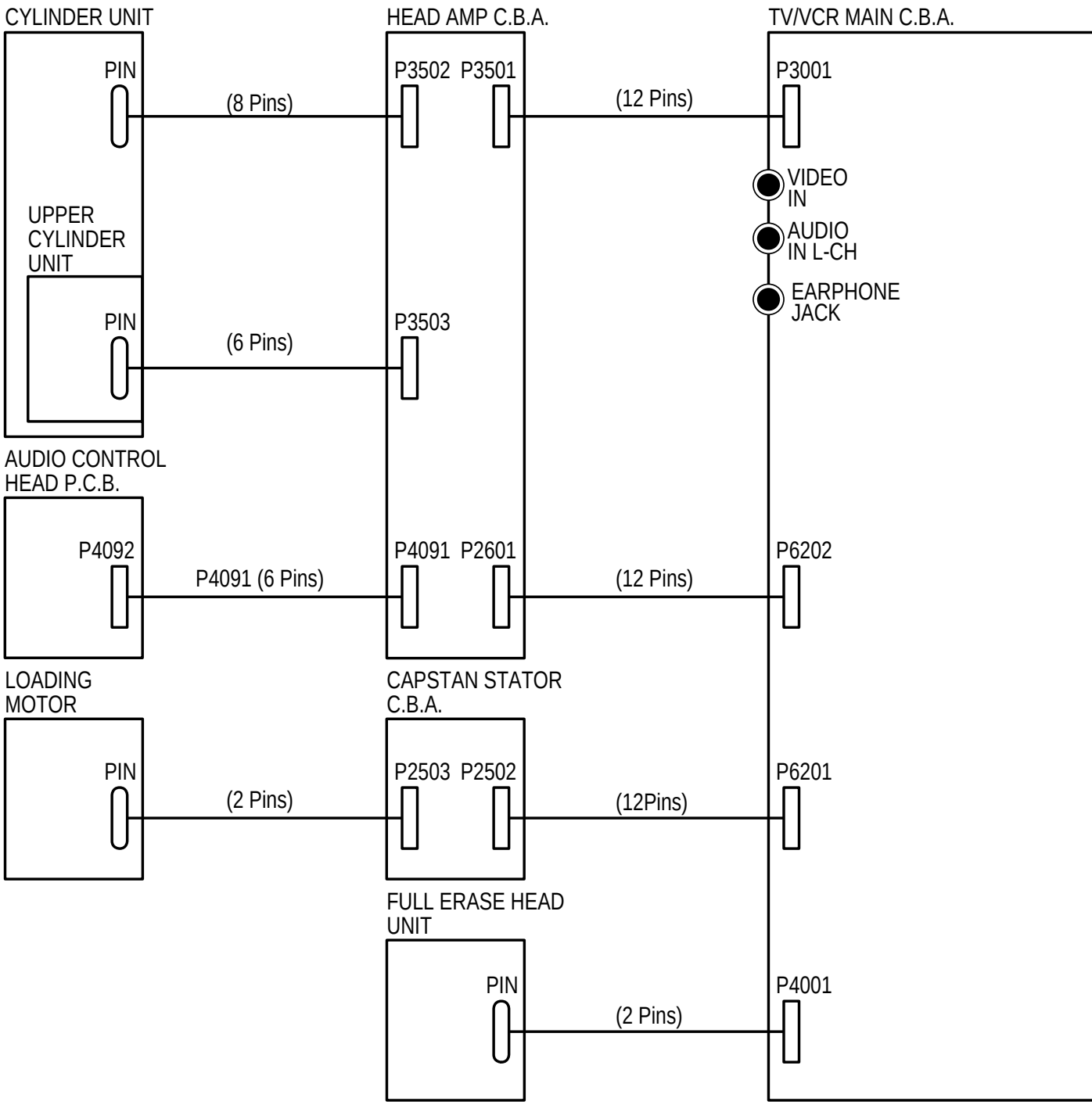
MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z



AG-520E CRT SCHEMATIC DIAGRAM

8.6. INTERCONNECTION SCHEMATIC DIAGRAM

INTERCONNECTION SCHEMATIC DIAGRAM



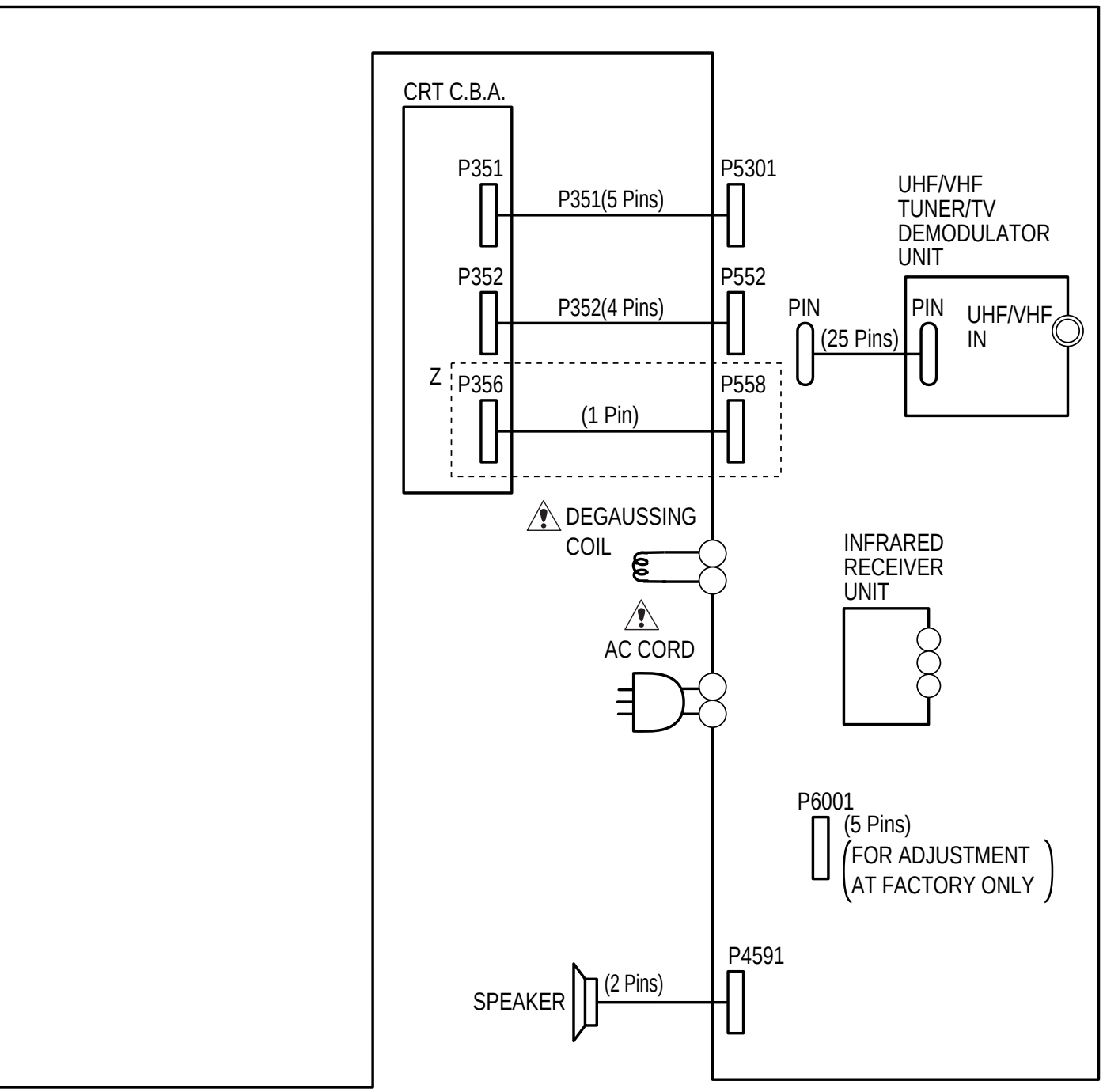
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B
Not Used	Z

C.B.A.



AG-513E/AG-520E INTERCONNECTION SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

TV/VCR MAIN C.B.A. (POWER SUPPLY/VIDEO/AUDIO SECTION)

MODE / PIN NO.	STOP
IC451	
1	11.4
2	4.0
3	5.7
4	5.8
5	0
6	5.4
7	5.8
8	23.8
9	2.5
10	1.6
11	0
12	16.2
13	24.9
IC501	
1	0
2	0
3	0
4	11.9
IC1001	
1	5.3
2	4.4
3	0.6
4	2.0
IC3001	
1	5.1
2	3.4
3	---
4	5.1
5	2.7
6	---
7	5.2
8	5.3
9	2.2
10	2.8
11	0.4
12	2.8
13	0
14	0.4
15	1.0
16	3.1
17	2.3
18	---
19	2.6
20	3.1
21	5.1
22	2.0
23	2.6
24	2.3
25	2.0
26	2.5
27	2.0
28	0
29	1.9
30	1.8

MODE / PIN NO.	STOP
31	2.0
32	2.4
33	2.0
34	2.8
35	---
36	2.5
37	0.1
38	4.6
39	2.3
40	3.5
41	2.8
42	0
43	3.4
44	2.6
45	2.6
46	2.6
47	5.1
48	---
49	0.1
50	---
51	5.1
52	2.5
53	2.5
54	1.8
55	2.1
56	4.5
57	2.6
58	2.7
59	2.6
60	2.6
61	2.6
62	0
63	0
64	---
65	2.6
66	2.7
67	2.7
68	5.2
69	2.7
70	2.2
71	2.6
72	2.6
73	2.6
74	0
75	0
76	2.5
77	0
78	2.2
79	3.0
80	2.2
81	2.6
82	2.8
83	2.6
84	3.8

MODE / PIN NO.	STOP
IC3201	
1	2.8
2	5.2
3	0
4	2.9
5	3.0
6	-3.3
7	2.2
8	3.3
IC4501	
1	---
2	0
3	6.4
4	0
5	1.9
6	5.9
7	5.9
8	14.1
IC4511	
1	---
2	0
3	6.3
4	0
5	1.9
6	5.9
7	5.9
8	0
9	6.0
10	14.1
IC5301	
1	2.7
2	3.0
3	3.8
4	5.1
5	2.1
6	2.2
7	6.1
8	0.4
9	0
10	4.0
11	5.2
12	2.4
13	4.2
14	6.2
15	4.4
16	0.7
17	0
18	0.1
19	1.8
20	0
21	2.8
22	3.0
23	3.0

MODE / PIN NO.	STOP
24	9.1
25	3.8
26	9.0
27	0
28	0
29	0
30	5.8
31	6.2
32	3.6
33	7.3
34	8.1
35	5.2
36	4.3
37	9.7
38	9.0
39	0.2
40	1.5
41	0.2
42	0
43	0.1
44	5.3
45	0.4
46	2.7
47	5.2
48	0.3
Q431	
E	2.1
C	0
B	1.5
Q432	
E	0
C	24.6
B	0.1
Q501	
E	0
C	86.0
B	0
Q502	
E	0.7
C	11.9
B	0.2
Q541	
E	18.2
C	-3.4
B	18.1
Q542	
E	0
C	18.2
B	0.1
Q551	
E	0.1
C	---
B	0

MODE / PIN NO.	STOP
Q571	
E	1.8
C	10.8
B	1.2
Q581	
E	121.6
C	0
B	121.1
Q801	
E	0
C	0.1
B	0.8
Q1001	
E	0
C	130.7
B	0.3
Q1002	
E	0
C	0.3
B	0.6
Q1003	
E	-0.6
C	4.2
B	0
Q1004	
E	4.4
C	0.1
B	4.2
Q1005	
E	5.3
C	5.3
B	4.7
Q1051	
E	11.9
C	15.1
B	12.5
Q1052	
E	0
C	12.5
B	0.6
Q1053	
E	5.2
C	5.3
B	6.0
Q1070	
E	11.9
C	11.9
B	11.3
Q1071	
E	-28.8
C	-28.6
B	-28.1
Q3001	
E	1.0
C	0

MODE / PIN NO.	STOP
B	1.7
Q3002	
E	1.8
C	5.1
B	2.5
Q3301	
E	0
C	4.3
B	-0.3
Q4001	
E	5.2
C	5.2
B	4.5
Q4002	
E	0.8
C	0
B	0
Q4003	
E	0.8
C	0
B	0
Q4101	
E	0.2
C	0.2
B	0
Q4171	
E	0.2
C	0
B	0
Q5301	
E	3.8
C	9.1
B	3.2
Q5901	
E	9.1
C	11.7
B	9.7
TP501	120.8
TP502	0
TP551	-19.0
TP552	-19.8
TP553	5.3
TP554	22.3
TP556	186.4
TP558	24.2
TP559	14.8
TP560	0.1
TP806	63.4
TP807	63.5
TP808	3.5
TP809	0
TP810	0.1
TP891	121.5
TP892	130.1

MODE / PIN NO.	STOP
TP893	0
TP1001	0
TP1002	33.0
TP1003	15.1
TP1004	-28.8
TP1005	5.3
TP1008	5.3
TP1009	0
TP1050	5.2
TP1058	11.9
TP3001	1.7
TP3002	2.5
TP3003	3.4
TP3004	2.0
TP3005	0.1
TP3006	2.5
TP3007	2.9
TP3008	2.4
TP3009	0
TP3010	3.0
TP3011	2.7
TP3012	3.0
TP3212	3.0
TP4002	0
TP4003	0
TP4501	0
TP4505	6.0
TP4506	1.6
TP4507	14.7
TP4591	0.1
TP4592	1.7
TP4706	0
TP4707	0
TP5301	3.5
TP5302	3.5
TP5303	3.5
TP5304	11.7
TP5305	0
TP5307	0
TP5308	1.5
TP5309	1.7
TP5310	7.2
TP5311	3.5
TP5401	4.0
TP5402	1.5
TP5403	0
TP5501	0.7
TP5502	0.1
TP5503	1.8
TP5504	-0.1
TP5505	0
TP5506	5.3

AG-513E
/AG-520E
VOLTAGE CHART

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

TV/VCR MAIN C.B.A. (SYSTEM CONTROL/SERVO SECTION)

MODE / PIN NO.	REC	PLAY
IC2601		
1	14.1	14.2
2	14.1	14.2
3	14.7	14.7
4	1.2	1.2
5	5.3	5.3
6	1.0	1.0
7	1.1	1.1
8	0.6	0.6
9	2.7	2.8
10	1.5	1.5
11	0	0
12	3.9	3.9
13	4.0	4.0
14	4.0	4.0
15	0.1	0.1
16	14.1	14.2
IC6001		
1	5.3	5.3
2	5.2	5.2
3	---	---
4	---	---
5	4.6	5.0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	5.2	5.2
13	0	0
14	0	0
15	0	0
16	0	0
17	5.1	5.1
18	5.2	5.3
19	5.1	5.1
20	5.3	5.3
21	5.2	5.2
22	1.1	1.0
23	5.1	5.1
24	0	0
25	2.5	2.5
26	2.6	2.6
27	0	0
28	5.2	5.2
29	0	2.6
30	0	2.6
31	0	0.1
32	5.2	0
33	0.5	0.5
34	0	0
35	1.9	1.9
36	0	0
37	2.4	2.4

MODE / PIN NO.	REC	PLAY
38	2.5	2.5
39	0.1	2.4
40	5.2	5.2
41	---	---
42	---	---
43	0	0.1
44	0.3	0.3
45	0	0.1
46	0	0
47	4.5	4.5
48	4.8	4.8
49	4.0	4.0
50	4.3	4.2
51	0	0
52	2.0	0
53	0	0.1
54	2.0	0
55	0	2.7
56	-0.2	0.2
57	5.0	0
58	5.1	0
59	2.5	0
60	2.5	0.1
61	0	2.3
62	0.1	0.1
63	0	0
64	0	0
65	4.9	0
66	2.3	0
67	5.2	0
68	0.1	0
69	0	0
70	0	0
71	0.1	0
72	0	0
73	0	0
74	0	0
75	0	0
76	0	0
77	0	0
78	2.6	2.6
79	2.6	0.1
80	0	0
81	2.6	0
82	5.2	5.2
83	3.0	---
84	2.2	2.6
85	2.6	2.6
86	0.4	0.3
87	5.2	5.2
88	2.5	2.5
89	0	0
90	5.2	5.2
91	5.2	5.2
92	2.9	3.0

MODE / PIN NO.	REC	PLAY
93	0.5	0.4
94	0.4	0.3
95	4.1	4.1
96	5.2	5.3
97	5.2	5.3
98	4.6	5.3
99	4.7	5.3
100	5.2	5.2
101	---	---
102	5.1	5.2
103	0.7	5.2
104	5.2	5.1
105	5.2	5.1
106	0.2	0
107	5.1	4.9
108	0.2	0
109	0.2	0
110	0.2	0.2
111	0.2	0
112	0.3	0.8
IC6002		
1	1.2	1.2
2	0	0
3	0	0
4	---	---
IC6003		
1	2.4	2.4
2	1.2	1.2
3	0	0
4	---	---
IC6004		
1	0	0
2	0	0
3	0	0
4	0	0
5	5.3	5.3
6	5.2	5.2
7	0	0
8	5.3	5.3
IC6005		
1	5.3	5.3
2	5.3	0
3	0	0
4	0	0
5	0.1	0
6	0	0
Q6001		
E	11.1	---
C	11.8	0.3
B	11.9	11.9
Q6002		
E	4.5	0
C	11.1	---
B	5.2	0

MODE / PIN NO.	REC	PLAY
Q6003		
E	0	0
C	0.1	0.1
B	0.8	0.8
Q6004		
E	5.2	5.2
C	5.2	5.2
B	4.5	4.5
Q6005		
E	5.3	5.3
C	5.2	5.2
B	4.4	4.4
Q6006		
E	0	0
C	5.2	5.2
B	0	0
Q6009		
E	0	0
C	5.2	5.2
Q6010		
E	0	0
C	5.1	5.2
TP6001	5.2	5.2
TP6002	5.2	5.1
TP6003	2.9	3.1
TP6004	---	---
TP6005	---	---
TP6006	0	0
TP6008	0	0
TP6009	5.3	5.3
TP6013	0	2.6
TP6021	0	0
TP6022	5.0	5.0
TP6023	0	0
TP6099	5.3	5.3
TP6201	2.4	2.4
TP6202	2.5	2.5
TP6203	2.6	2.6
TP6204	1.2	1.2
TP6205	2.6	2.6
TP6206	3.0	2.6
TP6207	2.6	2.6
TP6208	2.7	2.7
TP6209	2.5	2.5
TP6210	0.3	0.3
TP6211	2.8	2.7
TP6401	2.0	2.0

CAPSTAN STATOR C.B.A.

MODE / PIN NO.	REC	PLAY
P2502		
1	13.6	13.6
2	5.2	5.2
3	5.3	5.3
4	2.5	2.4
5	0	0
6	2.6	2.6
7	0	0
8	0.5	0.5
9	2.6	2.6
10	0.1	0.1
11	0	0
12	0	0
P2503		
1	1.8	1.7
2	1.8	1.7

AG-513E
/AG-520E
VOLTAGE CHART

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

HEAD AMP C.B.A.

MODE / PIN NO.	STOP
IC3501	
1	0
2	0
3	0.5
4	0
5	0
6	0
7	0.5
8	0
9	0
10	0.5
11	0
12	0
13	0.1
14	0.1
15	---
16	2.4
17	2.4
18	0
19	---
20	---
21	---
22	---
23	---
24	---
25	0.2
26	5.1
27	0
28	0
29	0
30	2.5
31	5.2
32	4.9
33	0.2
34	0.1
35	11.9
36	0.1
TP3501	0

CRT C.B.A. (A)

MODE / PIN NO.	STOP
Q351	
E	3.1
C	131.1
B	3.5
Q352	
E	3.1
C	127.9
B	3.5
Q353	
E	3.0
C	131.9
B	3.5
TP47	0
TP49	3.5
TP50	131.9

CRT C.B.A. (B)

MODE / PIN NO.	STOP
Q351	
E	3.1
C	131.1
B	3.5
Q352	
E	3.1
C	127.9
B	3.5
Q353	
E	3.0
C	131.9
B	3.5
TP47	0
TP49	3.5
TP50	131.9

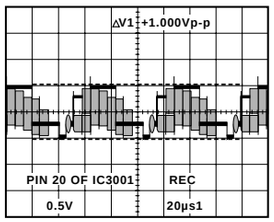
COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
AG-513E	A
AG-520E	B

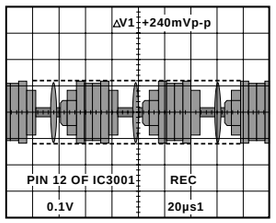
AG-513E /AG-520E VOLTAGE CHART

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

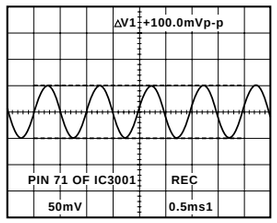
TV/VCR MAIN C.B.A.



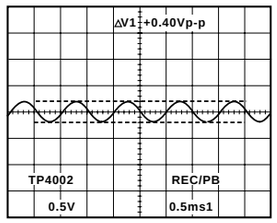
WF1



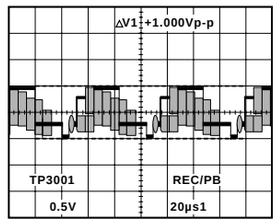
WF6



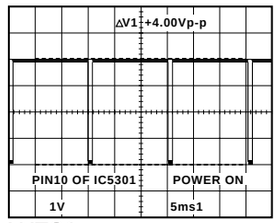
WF9



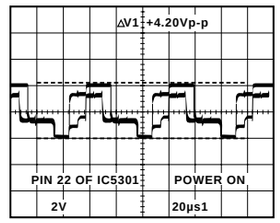
WF14



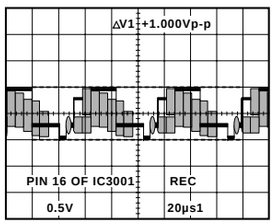
WF18



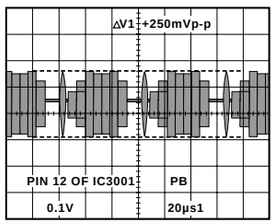
WF21



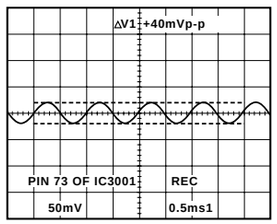
WF26



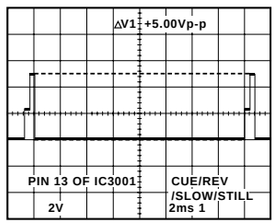
WF2



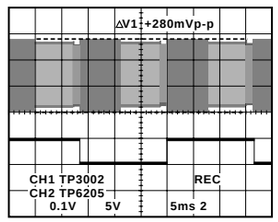
WF6



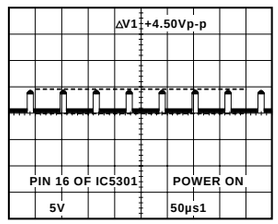
WF10



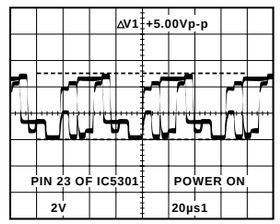
WF15



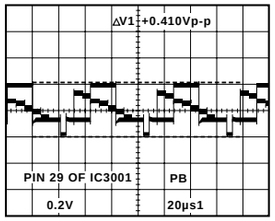
CH1 WF19
CH2 WF32



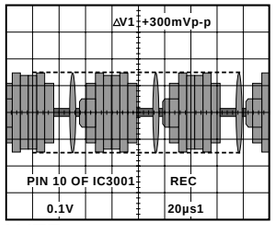
WF22



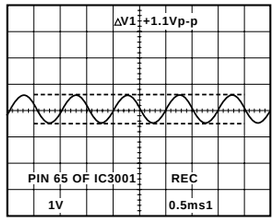
WF27



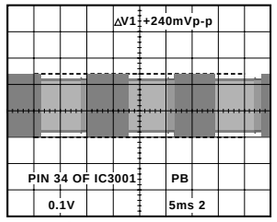
WF3



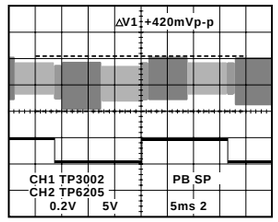
WF7



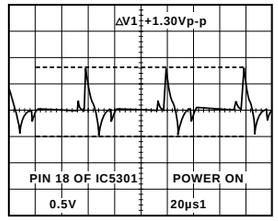
WF11



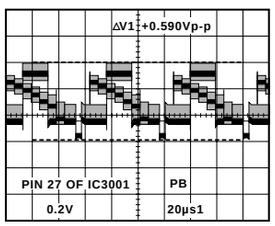
WF16



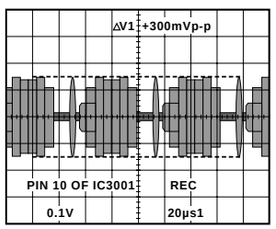
CH1 WF19
CH2 WF32



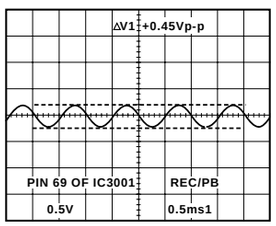
WF23



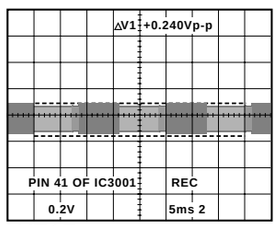
WF4



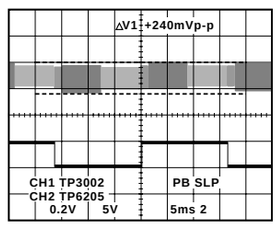
WF7



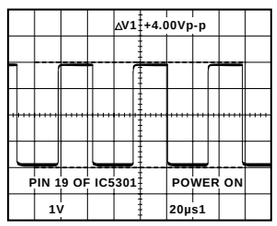
WF12



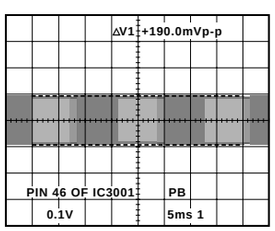
WF17



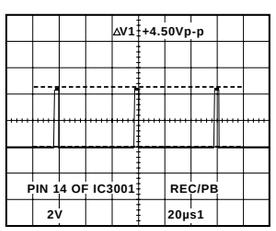
CH1 WF19
CH2 WF32



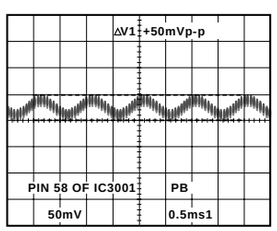
WF24



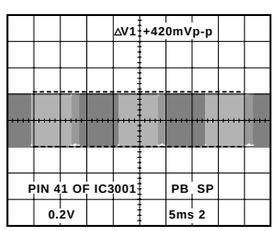
WF5



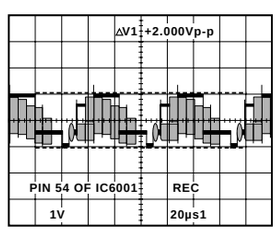
WF8



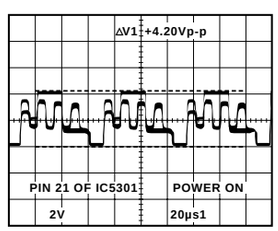
WF13



WF17



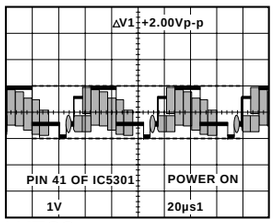
WF20



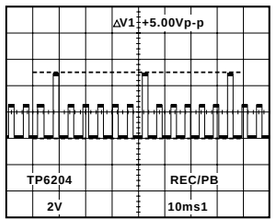
WF25

AG-513E/AG-520E
SIGNAL WAVEFORMS

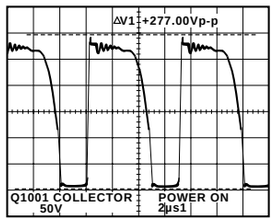
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.



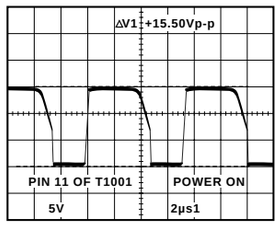
WF28



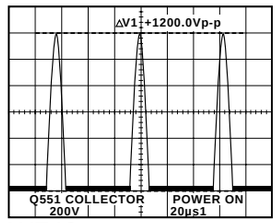
WF31



WF36

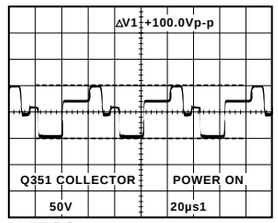


WF41



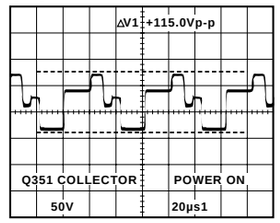
WF46

CRT C.B.A. (A)



WF60

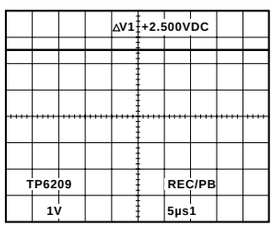
CRT C.B.A. (B)



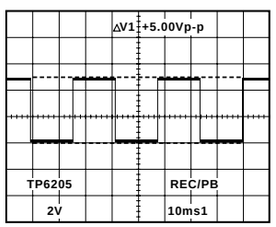
WF60

COMPARISON CHART OF MODELS & MARKS

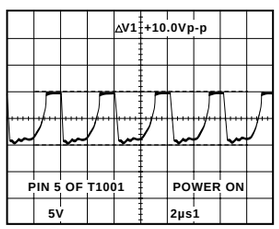
MODEL	MARK
AG-513E	A
AG-520E	B



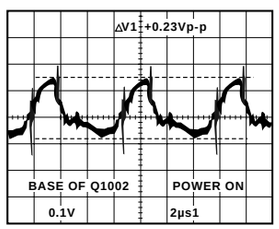
WF29



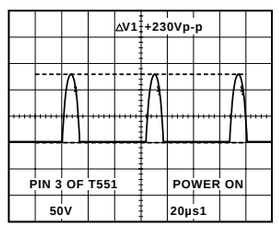
WF32



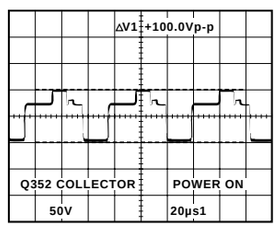
WF37



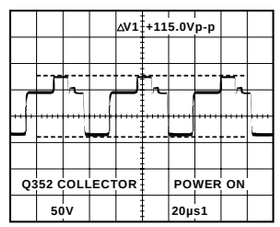
WF42



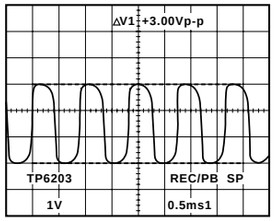
WF47



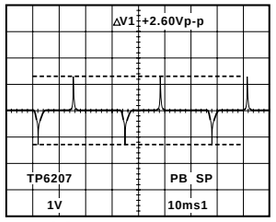
WF61



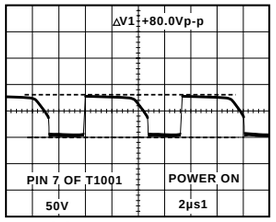
WF61



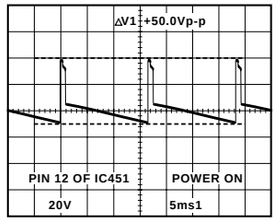
WF30



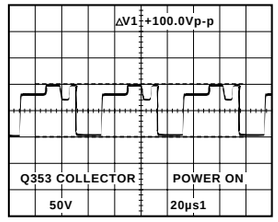
WF33



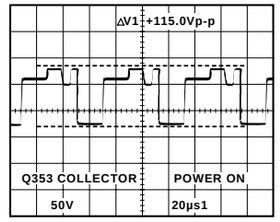
WF38



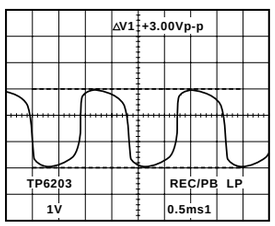
WF43



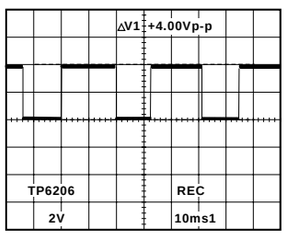
WF62



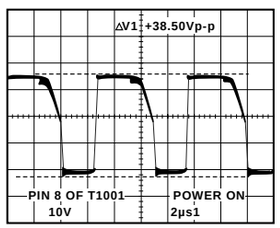
WF62



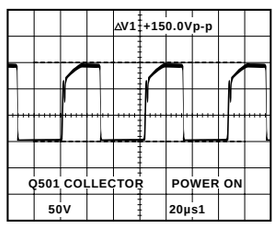
WF30



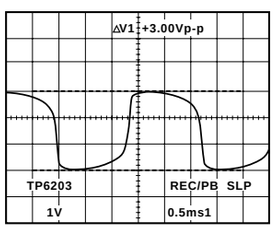
WF34



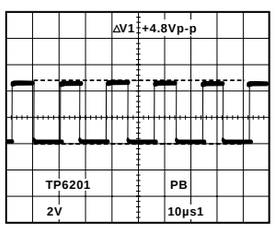
WF39



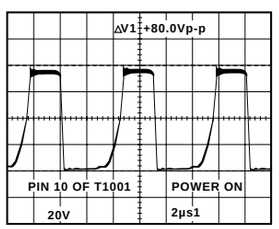
WF44



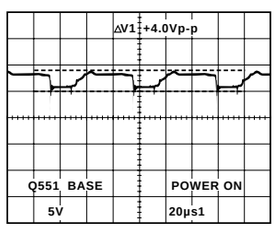
WF30



WF35

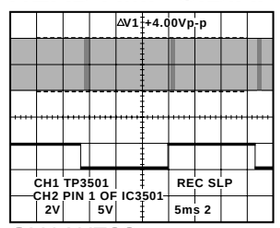


WF40



WF45

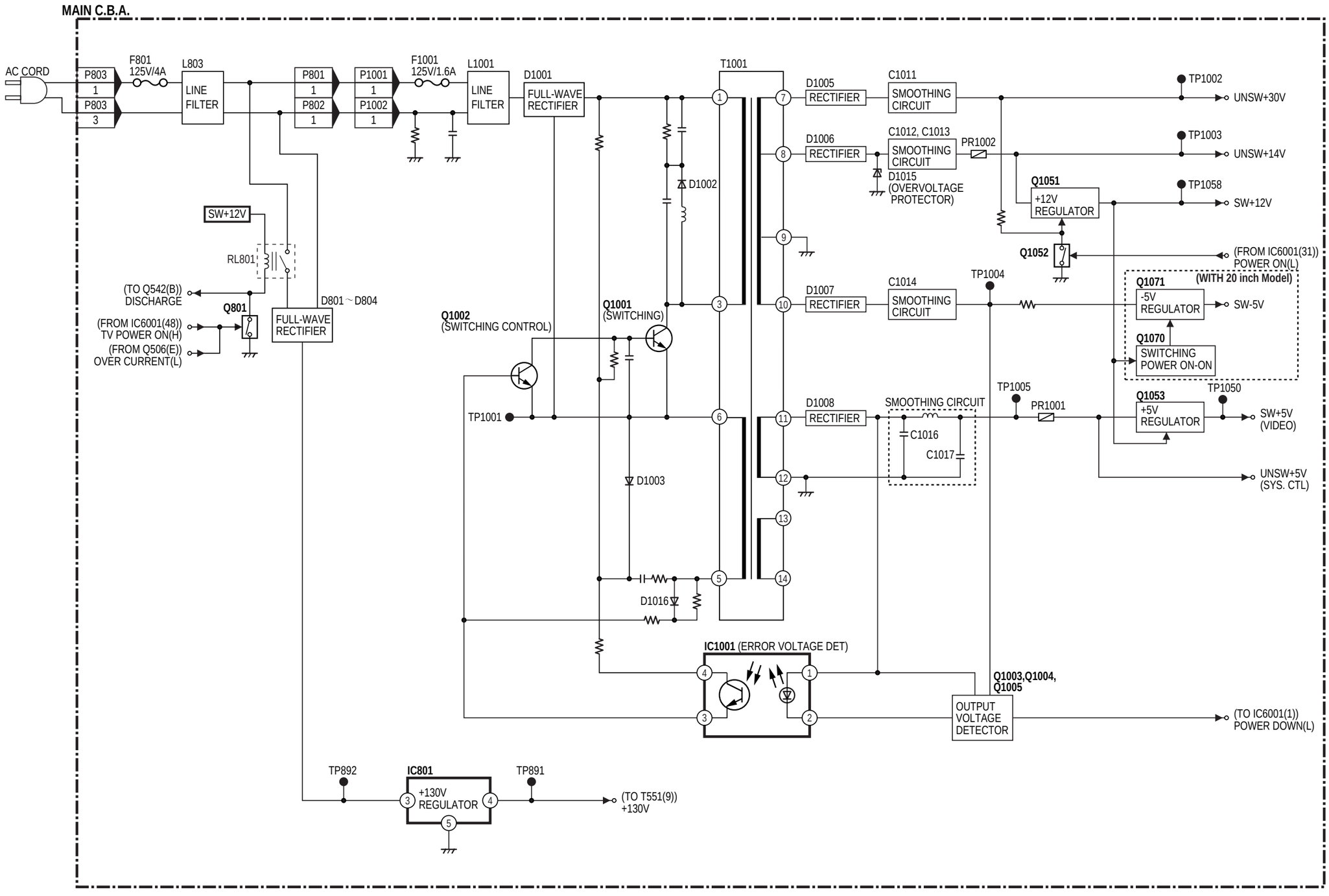
HEAD AMP C.B.A.



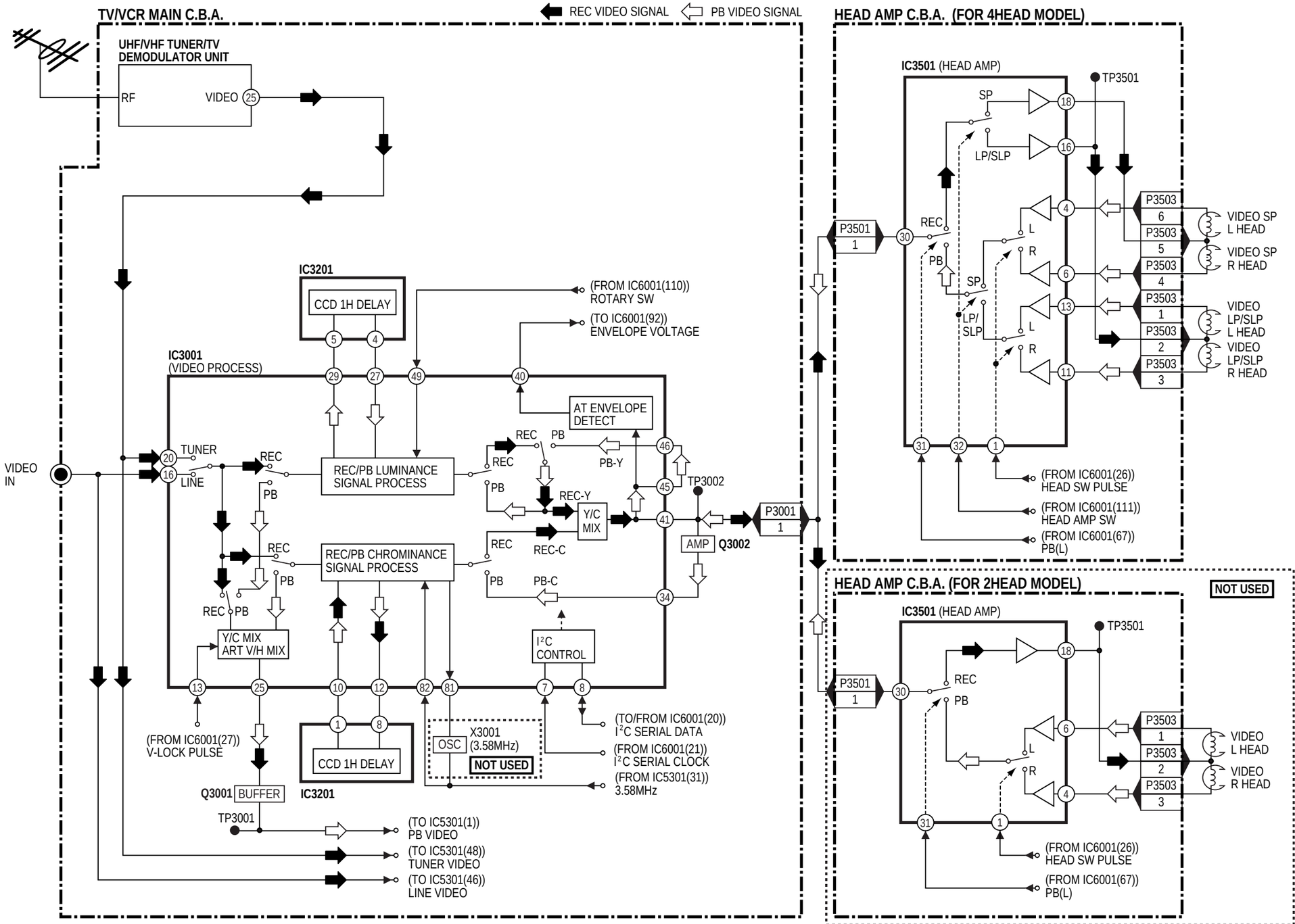
CH1 WF82
CH2 WF83

AG-513E/AG-520E SIGNAL WAVEFORMS

POWER SUPPLY BLOCK DIAGRAM



VIDEO SIGNAL PATH BLOCK DIAGRAM



AG-513E/AG-520E VIDEO SIGNAL PATH BLOCK DIAGRAM